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CONTENTS.

	PAGE		PAGE
FRONTISPIECE.			
Dry vs. Wet Plates in producing Negatives with the Line Screen for Half-Tone Engraving,		than Photography, 184; (g) Cincinnati School of Photography, 185; (h) Pictures by Tele- graph, 186; (i) Electricity and Steam, . . .	186
<i>John Carbutt,</i>	147	ART NOTES.—(a) Pittsburgh Art Gallery, 187; (b) Boston Museum, 187; (c) The Cleveland Exhibition, 187; (d) A Caution to Picture Buyers, 188; (e) Etchings, 188; (f) Philadel- phia Art School, 188; (g) Carolus-Duran, 188; (h) Boston's Appreciation of Art, . . .	188
Acetylene,	151	PHOTOGRAPHIC HINTS AND FORMULÆ.—(a) A Glass that Sifts Heat, 189; (b) Photograph- ing Prize Pictures, 189; (c) A Transparent Mir- ror Glass, 189; (d) The Monitor Studio Regis- ter, 190; (e) Metol, 190; (f) Aphorisms of an old Photographer, 190; (g) Glass Imitation Mother of Pearl,	190
The Genesis of Photography,	154	SOCIETY NOTES.—(a) The Photographic Society of Japan, 191; (b) California Camera Club, 191; (c) Minneapolis Camera Club,	191
Some Studio Blinds and Reflectors,		IN THE TWILIGHT HOUR,	192
<i>Edward Dunmore,</i>	156		
Photo-Process Work,	159		
Camera Posing as a Fine Art,	164		
The Stereo-Photochromoscope [Illustrated], . . .			
<i>F. E. Ives,</i>	166		
Photo-Mechanical Printing Processes—II.			
<i>Ernest Edwards,</i>	170		
The Northwestern Photographers' Association, . .	177		
Our Illustrations,	182		
THE EDITORIAL DROP SHUTTER.—(a) Encyclo- paedie der Photographie, 183; (b) Photograph- ers' Association of America, 183; (c) Another Solution of the Color Problem, 183; (d) The Royal Photographic Society, 184; (e) Lehrbuch der Praktischen Photographie, 184; (f) Worse			

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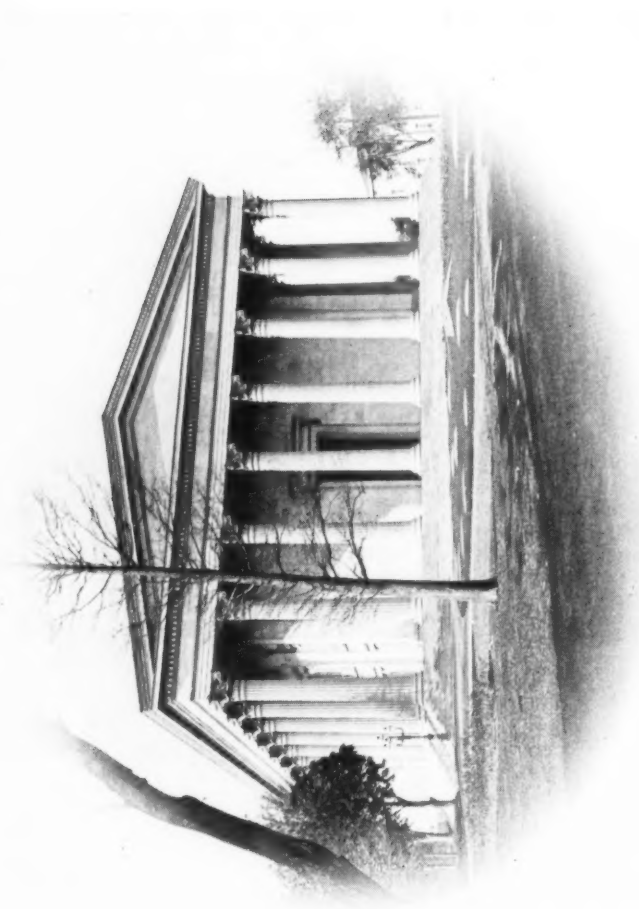
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INDEX TO ADVERTISEMENTS.

ACME ARISTO BURNISHER,	xvi.
ALPHA ARISTOTYPE PAPER,	xxv.
AMATEUR PHOTOGRAPHERS' HANDBOOK,	xxviii.
AMERICAN AMATEUR PHOTOGRAPHER,	xi.
AMERICAN DRY PLATE CO.,	xiii.
ANTHONY, E. & H. T. & Co., Entrekin's Burnishers,	xxxii.
ANTHONY, E. & H. T. & Co., "Aristo" Collodion Paper,	4th page of cover.
BARGAIN LIST,	i and ii.
BAUSCH & LOMB OPTICAL CO., Lenses and Shutters,	ix.
BEACON PUBLISHING CO., THE,	xix.
BLAIR CAMERA CO.,	xix.
BLITZ-PULVER FLASH-LIGHT,	xxxiv.
BLUE BOOK OF AMATEUR PHOTOGRAPHERS,	xxxv.
BUCHANAN, W. P., Luxo Powder,	xv.
BUFFALO ARGENTIC PAPER CO.,	xxii.
CANADIAN PHOTOGRAPHIC JOURNAL, The,	xxxii.
CARBUTT, JOHN, Photographic Plates,	xvii.
COLLINS, A. M., MANUFACTURING CO., Photographic Card Stock,	xii.
CRAMER PLATES,	ii.
DARLINGTON'S HANDBOOK,	xxvi.
DIETZ RUBY LAMP,	xxxv.
DRESDEN PHOTO-PAPER WORKS, Albumen Paper Pensée,	xl.
EASTMAN KODAK CO., Photographic Specialties,	v, vi, vii.
FRENCH, BENJ. & Co., Lenses,	viii.
GENNERT, C., Photographic Supplies,	xi.
GUNDLACH OPTICAL CO., Lenses,	xii.
HARRISON & Co., W. P., Plating Dynamos,	xxxvi.
HIGGINS, CHAS. M. & Co., Photo Mounter,	xxxii.
HOUGH, FRANKLIN H., Patents,	xv.
ILOTYPE COMPANY, Collodion Paper,	3d page of cover.
INTERCHANGEABLE VIEW ALBUMS,	xxvii.
KEMPER, A. C., "Kombi" Camera,	xv.
LAVETTE'S PATENT ENVELOPE,	xxxviii.
LONDON CHEMICAL CO., Hale's Photographic Specialties,	xxiii.
MANHATTAN OPTICAL CO., Lenses,	x.
MERCK & Co., Pyrogallic Acid,	xx.
MOREHOUSE MFG. CO., Schaefer Album,	xxiv.
MUNN & Co., Scientific American,	xxviii.
MURPHY, GEORGE, Photographic Supplies	xxxii.
NEPERA CHEMICAL CO.,	xxii.
NEW YORK ARISTOTYPE CO., Photographic Supplies,	xxxvii.
NOLAN, JOHN R., Patent Attorney,	xxxvi.
ORTHOSCOPE LENSES,	xxi.
PACIFIC COAST PHOTOGRAPHER,	xvii.
PACKARD BROS., Scenic Productions,	x.
PERFECTION BLUE PRINT PAPER,	xxix.
PHILLIPS & JACOBS, Photographic Chemicals,	xvi.
PHOTOGENIC PAPER CO., Matt and Glace Papers,	lxiv.
PHOTOGRAM, THE,	xv.
PRESS CLAIMS CO., Patents, Pensions, etc.,	ix., xxviii., xxxvi.
PROSCH MFG. CO., Shutters and Flash Lamps,	xxxv.
ROCHESTER OPTICAL CO., The "Premo" Camera,	xxiii.
SCHERING, E., Pyrogallic Acid Developer,	xxxiii.
SPRAGUE SCHOOL OF LAW,	xxvi.
SUNART PHOTO CO., Sunart Magazine Camera,	ix.
UNITED STATES ARISTOTYPE CO.,	xiv.
WALPOLE DYE AND CHEMICAL CO., Photographic Chemicals,	xxvi.
WESTERN COLLODION PAPER CO. (Killborn & Kurtz),	xi.
WILSON, EDWARD L., Photographic Literature,	xiv.

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APRIL, 1895.



COPPER HALF-TONE ENG.

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(CARBUTT'S PROCESS.)

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AMERICAN JOURNAL OF PHOTOGRAPHY

THOS. H. McCOLLIN, Managing Editor.

JULIUS F. SACHSE, Editor.

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DRY *vs.* WET PLATES IN PRODUCING NEGATIVES WITH THE LINE SCREEN FOR HALF- TONE ENGRAVING.

JOHN CARBUTT.

SINCE the advent of what is now called the half-tone engraving method, the making of the negative has by the majority of operators, been accomplished by the wet collodion process, as the more rapid gelatino-bromide plate was not amenable to the treatment of clearing and intensifying used in the wet process. It is the purpose of this article to show and prove, that by the use of a specially prepared process plate which I have tested, equally as fine half-tone blocks are produced as by the wet plate process, and have been used for a year or more past by firms who formerly used the wet plate method, but never laid it aside to the exclusive use of the new Gelatine Process plate. As the gelatine plate is always ready for use, and more sensitive than the bath plate, and the time taken up in developing, clearing and intensifying being about the same as the wet plate, much valuable time is saved, besides relieving the operator of preparing collodion, keeping silver baths in order, etc. The same plates are used in producing negatives of pen drawings, reproduction of wood engravings for transfer to stone, or producing deep etched blocks. The following solutions are required for developing, clearing, fixing, reducing and intensifying the process plates :

DEVELOPING FORMULA FOR HALF-TONE (SCREEN) AND NEGATIVES
OF PEN DRAWINGS.

No. 1.

Neutral oxalate of potash - - - 1 lb.
Warm water (free from lime salts) - - - 48 oz.
Add of a strong solution of citric acid enough to just turn
litmus paper red.

No. 2.

Sulphate of iron - - - - - $\frac{1}{2}$ lb.
Warm water - - - - - 24 oz.
Sulphuric acid - - - - - 15 drops.

No. 3.—RESTRAINER.

Potassium bromide - - - - - $\frac{1}{2}$ oz.
Water - - - - - 10 oz.

To Develop.—To 5 oz. No. 1, add 1 oz. No. 2 and 10 drops
No. 3.

To get an even developed plate, use sufficient developer
to well cover the plate, allow to act, until on looking through, the
image appears quite dense, then wash and place in clearing bath
one or two minutes.

No. 4.—CLEARING BATH.

Water - - - - - 20 oz.
Alum - - - - - 1 oz.
Citric acid - - - - - $\frac{1}{4}$ oz.
Again wash and immerse in

No. 5.—FIXING BATH.

Water - - - - - 6 oz.
Sulphite soda - - - - - 2 oz.
Water - - - - - 2 oz.
Sulphuric acid - - - - - 1 drachm
Water - - - - - 48 oz.
Hyposulphite soda - - - - - 1 lb.
Water - - - - - 8 oz.
Chrome alum - - - - - 1 oz.

Dissolve in the order given, add the solution of sulphuric acid
to the sulphite of soda, and this to the hyposulphite, and finally
add the solution of chrome alum.

No. 6.—REDUCING SOLUTION.

Ferricyanide potassium	-	-	-	50 grs.
Water	-	-	-	10 oz.

No. 7.—BLEACHING SOLUTION.

No. 1.

Bichlor. mercury	-	-	-	240 grs.
Chloride of ammonium	-	-	-	240 grs.
Distilled water	-	-	-	20 oz.

No. 2.

Chloride of ammonium	-	-	-	240 grs.
Water	-	-	-	20 oz.

No. 8.—CYANIDE SILVER SOLUTION.

Distilled water	-	-	-	6 oz.
Cyanide potassium C. P.	-	-	-	60 grs.
Distilled water	-	-	-	2 oz.
Nitrate of silver	-	-	-	60 grs.

Pour the silver into the cyanide solution while stirring, and mark bottle Poison.

Notes on using the foregoing solutions: Supposing that 6 oz. of developer is mixed, and a number of plates are developed, if bulk is reduced to 4 oz., add 2 oz. of a fresh mixture and no bromide; also if what is left is placed in a bottle, on using it the next day, mix half of it and half of fresh mixed developer, and it will be found to work more uniform than the developer freshly mixed, the old acting as a restrainer. *Always* use No. 4 solution after washing off the developer, and its function is to remove any trace of iron left in the film, and which, if not removed, will leave an opalescence in the clear spaces, also to harden the film and prevent its swelling up. After a stay of not less than 2 minutes in No. 4 solution, the negative is thoroughly rinsed and placed in No. 5, Fixing Bath, and when thoroughly cleared, reacts. Do not proceed to wash out the hyposulphite as is ordinarily done, but simply *pass* the negative through water to remove the surplus hypo solution on surface, then examine with magnifying glass to determine whether any reducing or clearing is required, either as a whole or locally, which I consider is best done at this stage, as the hypo left *in* the film acts with the reducer, Ferricyanide of Potash, much better in clearing the transparent places,

than if a mixture of hypo and Ferricyanide were used after all hypo had been washed out; the 5 gr. solution of No. 6 can be used as a bath in a white porcelain dish, and the reducing effect watched closely, then removed and its action immediately stopped by washing. If any part of the negative is found to require local reduction, the No. 6 solution can be applied to the part to be reduced with a tuft of absorbent cotton, or large round camel-hair brush, and then washed to remove all hypo. If intensification is required it is best done after the negative has been allowed to dry, but as time is of the utmost importance in this class of work, intensification can be done now, the only danger being of any hypo remaining in the film, which would cause a yellow stain after being intensified. To avoid this place in No. 4 for 1 minute, then wash and place in the mercury solution until whitened, then wash again, and reduce the chlorized image to bleach either with a 10 per cent solution of sulphite of soda or the cyanide of silver solution, the latter gives the clearest and most dense deposit; wash for a few minutes and dry spontaneously, or, if desired to dry quickly, it may be dried in warm air at a temperature of 90 to 100 degrees. Where electric light is used, if the negative is placed before a small electric fan, it will dry very rapidly, as the film of gelatine on these process plates is very compact, and does not swell up to any superficial extent. I have now explained sufficiently the mode of using the process plate for producing half-tone negatives, from which blocks can be made that will furnish prints of the highest quality, and enable those who are tired of the vagaries of the old wet method, to realize, that time, patience and money are saved by adopting the new. For those who do not use a prism to reverse the image, stripping Process Plates can be used, and are treated just the same as plain plates; when dry they are laid on a levelling stand, on three points, brought to a level, the plate covered with Stripping Medium, using 2 oz. for 8x10 plates; 1½ oz. for 6½ by 8½; ¾ oz. for 5x7. In a warm room it will dry in twelve hours, or overnight.

The illustration accompanying this article is an example of commercial work produced as described, from Gelatine Process plates.

ACETYLENE.

RECENTLY Professor Vivian Lewes gave, at the Camera Club (London), a lecture on Acetylene, being a repetition, to a great extent, of what he had brought before the Society of Arts on a previous occasion. He showed that the gas as an illuminant was extremely rich in the qualities which should commend it to photographers for portraiture in the absence of daylight, and that its production is a very simple matter, provided that calcium carbide, from which it is made, is cheaply obtainable.

Acetylene has hitherto been of interest only to the chemist, but by a recent accidental discovery it promises to be of some commercial importance. It seems that a Mr. Wilson had some time ago erected some large works in Pennsylvania for the production, in the electric furnace, of aluminium, and that in the course of certain experiments he endeavored to obtain metallic calcium. This involved the use of a mixture of lime and charcoal, which was placed in the crucible, and the current applied. Instead of calcium, Mr. Wilson found a heavy, black stony mass, which he threw into some water which was at hand. Immediately the water was thrown into the most violent commotion, and the application of a lighted match showed that the black mass, whatever it might be, was yielding immense quantities of gas of very high illuminating power. The black stone was calcium carbide, and the gas acetylene. Professor Lewes was able to repeat this experiment on a smaller scale, by placing a lump of the carbide on a plate, and setting aflame the gas that came from it after the application of a few drops of water. Besides this demonstration he had before him a miniature gasworks for the production of acetylene, consisting of a flask containing broken-up carbide, a drop bottle above it containing water, and a gas-holder to contain the acetylene, which was given off copiously and with much regularity. This gas-holder subsequently fed several burners, and the room was lighted up in a manner which showed the high illuminating power of acetylene. It is, indeed,

the most luminous of all hydrocarbons, as the following table will show :—

Methane	-	-	-	5.2	candle power.
Ethane -	-	-	-	35.8	"
Propane	-	-	-	56.7	"
Ethylene	-	-	-	70.0	"
Butylene	-	-	-	123.0	"
Acetylene	-	-	-	240.0	"

The flame is intensely white, and when the gas is employed in batwing burners of suitable character, the non-luminous zone, which in ordinary coal-gas constitutes so great a part of the flame, is reduced to a mere speck.

It is at first sight a most promising thing that by pouring a few drops of water upon a stone we can obtain a high-grade illuminating gas, and some of our contemporaries have been so led away by this apparent marvel, that they have given their imaginations the rein, and have prophesied the early annihilation of the existing gasworks. "Every man his own gas-maker, and down with monopolies," seems to be their war-cry. We think, however, that a little cool consideration will show that Acetylene, even if produced at a reasonable price, will do the gas companies very little harm, at any rate for a long time to come. One point, at least, is clear; acetylene is not suitable for cooking or heating purposes, and it will not drive engines as at present constructed. The gas companies are selling about half the gas they make for these employments, and the demand is rapidly increasing. If calcium carbide can be placed on the market at a cheap rate, we doubt not that lamps will be devised for utilizing it, but at present we have but little information as to the price at which carbide can be produced. It is thought to be about £4 per ton, but Professor Lewes, distrusting these figures, would prefer to say £6 per ton on the English market. Certainly the raw materials, lime and carbon, are cheap enough, but, until we can actually get an electric furnace to work producing the carbide, and can estimate the actual cost of production per ton, we shall be unable to judge of the commercial value—if any—of the new discovery.

Professor Lewes believes that Acetylene has a future before it

in the compressed and liquid state, and that it will be obtainable in cylinders in just the same way that liquid carbon dioxide and nitrous oxide are supplied at present. The gas liquefies under a pressure of twenty-one atmospheres, so that the operation would not be so costly as the compression of coal-gas or oxygen, which is carried to 120 atmospheres. Still the operation must be costly, and the companies could hardly charge less than one penny per foot for compression. This at once places the liquefied gas out of court for ordinary purposes, and few persons would care to use it for enriching the coal-gas supplied to their houses, as Professor Lewes suggests. Another suggestion of his, that a cylinder of acetylene, measuring four feet long by six inches in diameter, might supply a country-house of moderate size with efficient illumination for a fortnight, is, we think, open to question unless we eliminate the matter of cost. We may take it as an axiom that compressed gases offer wonderful conveniences, and are economical for special purposes, but that the cost of compression must always limit their use to these special employments.

It may be pleaded that artificial light for portraiture represents one of those special uses for acetylene; that a brilliant light is only required for a few seconds, and that a photographer could well afford to pay a little extra for the convenience afforded. This is true enough, but it is only reasonable that the photographer should look around him and consider whether this want of a brilliant artificial light is not already sufficiently met. Of the electric light we need not say much. Everyone knows how efficient it is, and how rapidly mains for the supply of the current are being laid along our streets. Then there are several efficient means of burning magnesium, some lamps giving a continuous flood of light of the greatest actinic value. Lastly, we have the incandescent gas system, which has not yet received half the attention it deserves. It utilizes the gas which is now laid on to every house, and, at small initial expense, the photographer can furnish his studio with a light always ready to his hand, which will make the barest increase in his household gas bill.

We shall look with interest to the progress of acetylene, for its ready production from calcium carbide is one of those happy

accidents which take hold of the imagination. Whether it will prove to be of commercial importance we shall soon know, for the inevitable company or syndicate will, of course, be formed to work it, and the prospectus will possibly wear a more sanguine complexion than the remarks which we now offer to our readers.

THE GENESIS OF PHOTOGRAPHY.

DURING the past few months renewed interest has been taken in photographic circles in the early history of photography, and in the forgotten processes of the past.

Valuable contributions upon this subject have appeared in England, one of which, by Mr. W. H. Strumney, editor of *Photography*, was republished in the AMERICAN JOURNAL OF PHOTOGRAPHY for March. A more extended one, was the paper read before the Brixton Camera Club, by Mr. W. H. Harrison, and which was printed in full in the February *Photographic Review of Reviews*, to which must be added the valuable contributions by Mr. E. J. Wall.

Now while upon this subject, the present writer would throw out a little problem for his confreres beyond the sea to solve, viz.: Scheele is almost universally credited with first calling attention to, or the discovery, so to speak, of the peculiar property of nitrate of silver under the action of light. This was in 1777, if the writer mistakes not, in the latter's "Traité de l'Air et du Feu." Now so far so good, and yet it appears that this peculiar property of nitrate of silver was well known in London thirty years before Scheele was born.

If my learned confreres will refer to "Zacharias Conrad Von Uffenbach | Merkwürdige Reisen | durch | Niedersachsen und Engelland | Ulm, 1753," a book which can be found in the British Museum, if not in any of the larger libraries, they will find on page 187, Vol. III., where Uffenbach, in describing his visit to London, under the date October 17th, 1710 (date of year on page 1 of Memoirs), that "on the evening of that day

they [Uffenbach and his brother] went to the Paris Coffee House, where they met a learned company. Upon this occasion we learned from Baron Nimtsch the art of etching and painting [staining?] marble."

He states that "incidentally a watchmaker came to us and offered for sale an agate, upon which there was a cross, and looked as if it had originally grown there."

"Baron Von Nimtsch, however, assured us that it was brought about as follows :

"If one takes *aquam fortem* [nitric acid] and dissolves therein *lunam* [hornsilver, chloride of silver], and then writes with the liquid upon a stone, it will at once etch black. But if *aquam regiam* is substituted and gold dissolved therein, it will make red characters."

Who the learned Baron Von Nimtsch was, who so well knew the property of nitrate of silver, the writer has not been able to discover. Perhaps my European confreres can throw some additional light upon the subject.

Another peculiarity about the above is that it should thus far have escaped the various German investigators. Even Dr. Joseph Maria Eder, in his exhaustive "Handbuch der Photographie" (Wm. Knapp, Halle a.S., 1891), seems never to have come across above reference, although he gives several which antedate Scheele; none, however, go back farther than that of Dr. J. H. Schultze, a German physician, who printed words and letters upon a sensitive compound by means of light in 1727.*

In conclusion the writer will state that he does not wish to detract a single iota from the great credit due Scheele for his investigations and discoveries. To quote the language of Dr. Eder (Handbuch, 28) after enumerating a number of his predecessors, he states, "However, to him (Scheele) is due the honor, as his experiments, more so than those of his predecessors, were conducted with an aim and object in view, and resulted in establishing the photo-chemistry of the solar spectrum."

JULIUS F. SACHSE.

* Dr. Eder's Handbook of Photography, and Wm. H. Harrison, Camera Club Conference, December 22d, 1892.

SOME STUDIO BLINDS AND REFLECTORS.

EDWARD DUNMORE.

THE most important difference between the domestic window blind and those for studio use is, that in the one case their sole use is to reduce the general illumination of the apartment, and in the other to reduce it partially and locally without any regard to the remaining space. No special kind of blind can be recommended for indiscriminate use in all studios—the position and form of the glass room must determine the most appropriate device. It is, however, imperative that one and all fulfill certain conditions, and be under easy control of the artist.

Primarily, they must obstruct the passage of all direct light, and be so under control that light may be admitted at any place and any angle the operator may think fit, and that with celerity and a minimum of trouble. Formerly, the special lighting was almost entirely limited to the end of the studio occupied by the sitter; in these days, there is no special place for the sitter, who is posed anywhere in the studio that may suggest itself to the artist as suitable for getting the effect he desires. This necessitates the arrangement of blinds that cover the whole of the glass, and that can be withdrawn at any point independent of the rest. It is a golden rule to have *no more* light than is necessary for the effect desired. If we adhere to this, we improve the brilliancy of the image wonderfully, without in any degree lengthening the exposure. It was with this idea tunnel studios were constructed, and, when the model was always placed within a few feet of the end of the room, there was much to recommend them; the eyesight of the operator was certainly advantaged when every exposure had to be developed immediately after it was made, the continual change from the light to the gloom of the developing room was very trying. The tunnel form in a measure removed this, preserving a much-reduced light for manipulating the camera, so much so that focussing cloths could be dispensed with, and the movements of the operators be less observable from the sitter's position; the two latter conditions would even now be an advantage where the model is placed before a fixed background.

Perhaps the most generally popular and useful form of studio is the oblong, with a ridge roof, supplying a north light—a more equable light than other, and, consequently, more easily managed, and one by which almost any, except direct sunlight, effects can be obtained. By having the south side made substantially of bricks and mortar, and the roof slated, unpleasant summer heat is very much modified; the advantage of a moderate temperature is more than equivalent to the extra glass area. One window of moderate dimensions may be useful in the roof, and a similar one in the wall on the sunny side, to lighten the shadows, in place of reflectors; but, as I have remarked, a solid heat-resisting wall is the principal thing, and we do wisely to sacrifice a little light for this result. In this connexion, a blind, or rather a canvas sheet, stretched over, and a few inches above, the roof, moistened with jets of water from a pipe laid along the ridge, is a very effective means of reducing the temperature in sultry weather; otherwise, outside blinds are not so much use in a studio of this form, for, with the exception of a short time in the middle of the day in the height of summer, no direct rays enter the studio. The advantages of covering the whole of the glass with white paraffined paper, irrespective of blinds, is a means of getting very soft images, with very little difference in exposure to unobscure glass; in fact, if the studio is much surrounded by high buildings or trees, the light will be increased rather than diminished. The paper may either be attached to light removable frames or permanently to the framing of the glass. This kind of paper remains colorless a long time, and in case of damage, is easily replaced.

With respect to the blinds proper, they consist of two sets, white and opaque. The dark ones are made of green or dark blue material usually employed for the purpose. Green retains its fresh appearance rather longer than the blue; in other respects they are equal. The side blinds should not be more than two or two and a half feet wide attached to spring rollers at the bottom. The plan of drawing them down from a fixed point at the top is a decided waste of power, and induces certain troubles in lighting the sitter that the opposite method entirely avoids. The roof

blinds consist of two separate sets, meeting in the centre, their number, of course, depending on the width of the skylight. Two sets of three each are generally sufficient, the edges over-lapping, say, one width near to the glass and two widths a little below it. The wall ends are permanently fixed, and the free ends stiffened with laths. These blinds run on wires passing through rings sewn to the blinds, and are moved by endless cords passing to and fro through pulleys. The operator can stand in front of his model to adjust the lighting exactly to his taste without the objectionable walking backwards and forwards to make little alterations. A very few inches more or less light will make a great difference in the character of the illumination, and the fact of occupying a position during the adjustment from which every slight variation can be noticed is a great assistance, that must be experienced to be fully appreciated. Additional blinds of blue gauze merely hung on cords across the studio, and moved somewhat after the style of hoisting a sail on board a vessel, will be found of use. When the sitter is troubled with weak eyesight, it will, with very little difference to the exposure, if any, afford considerable relief, and permit the pupils of the eyes to expand, thus improving the expression. The foregoing are all the fixed blinds required for the average glass room.

The up-to-date photographer is not contented with the limitation of two ends of a room, but will place his model in various parts of it. Two or three small movable backgrounds come in useful for special effects. If a kind of tunnel is made—by placing two backgrounds parallel about five feet apart, and throwing a curtain or cloth over the top, the sitter being placed a short distance from one end, and the camera at the other—very delicate effects of shadow may be obtained, regulated by the distance the model is placed from the tunnel, a suitable background being contrived from the accessories available. This device is, I think, one of the best for obtaining effects in fancy lighting I know of, being very much more under control than when the open studio is used, and being, so to say, independent of any peculiarities in the construction of the room.

Hand in hand with blinds are reflectors. Their usefulness de-

pendes very much on the kind of glass room and the color of the walls and surroundings. A predominating pale blue or drab tint is almost equivalent to reflectors, and, with the lighting arranged as described, reflectors are almost a superfluity; however, supposing the walls and surroundings are dark, they become absolutely necessary. They may be made somewhat after the fashion of a swing mirror; a light wooden frame, three feet wide by four long, covered with white material on one side and blue on the other, is a very useful kind; another about two feet square, fixed on a telescopic stand with a universal joint, is also a handy contrivance.—*British Journal of Photography*.

PHOTO-PROCESS WORK.*

JOHN HISLOP.

IT is with some hesitation that I venture to read a short paper on Photo-engraving, a process which is occupying the minds of all who are interested in the art of illustration. I shall confine my remarks mainly to the photo-engraved blocks for typographic printing, which, amongst the various processes, has by far the largest field open to it. To produce first-class half-tone photo-engraved blocks it is necessary to have suitable appliances for the making of the negatives, the foundation work of the process. This part of the work appears most simple, especially with the aid of the dry plates recommended for photo-mechanical work. It is, however, only after much trial and vexation that one is forced to revert to the old wet-plate method, which is found to give the most satisfactory and reliable half-tone negatives. Having mastered this, it is necessary to have a fine-line screen plate for the breaking up of the continuous gradations of light and shade in the picture to be produced. Owing to the high price of perfect screens, one is tempted to try those advertised at a cheap rate, or fall back on cheap muslin, gauze, etc., as used by Mr. Fox Talbot some forty years ago; but, after all, it seems

* Read before the Edinburgh Photographic Society.

hopeless to accomplish the art reproductions of the present day without the use of the perfected line-screens, as made by Max Levy, M. Wolf and others. The one most used is that with 132 lines to the inch, a specimen of which is now shown on the lantern screen. Screens with eighty lines are used for newspaper illustrations, or for large and bold subjects; 120 is very suitable for the ordinary run of magazines, or general illustrations, when printed along with letterpress; that with 150 lines to the inch is good for subjects with fine detail, or art productions where the greatest care will be bestowed, and the best materials used. Screens are made to a still much finer degree, but I do not think they can be used with any success commercially at present for typographic work. The near future will, no doubt, bring in marvels of the finest printing, and it is sincerely hoped that our own romantic and well-famed city will continue to lead in the highest class work, as it has done in the past. Many process engravers keep the same high standard before them, so as to secure and maintain the highest degree of excellence.

It is not within the scope of this short paper to discuss the many points of the screen, important as these are. The screen is placed in the dark slide in front of the wet plate, and requires the most careful manipulation. In determining the distance between the screen and wet plate, no set measurement can be given, as a long focus-lens with small aperture would yield a different result from one of shorter focus and wide aperture. Experience is the best teacher in regard to this most important point, the different styles of pictures requiring various methods of treatment to produce the continuous gradations necessary to yield the half-tones. Some workers prefer adjusting the screen to the various pictures, others prefer having it nearly at a fixed distance, and used diaphragms to get the desired effect. When this experience is gained, a triumph is secured. The negative having to be reversed, it is needful to have a mirror or prism attached to the front of the camera. This is the most expeditious mode of getting a reversed negative, but seems to lose light and sharpness of detail. It is therefore better to expose direct, without the aid of mirror or prism, and afterwards strip and reverse the film.

Having secured a first-class negative, the next operation is to get it printed on to the metal, which is usually zinc specially prepared. This is cut to the required size, leaving about half-an-inch margin all round, after which it is made chemically clean, and coated in a dark room with the following solution :

Albumen	1 ounce.
Distilled water	8 ounces.
Bichromate of ammonia	25 grains.

Switch or beat the albumen to a froth, and allow it to settle ; dissolve the bichromate in the water, then add the albumen, and mix well together by means of an egg switch, or by placing some broken pieces of glass in the bottle, and shake well ; add ammonia drop by drop until it turns litmus paper blue, filtering it through a piece of absorbent cotton-wool ; it cannot be filtered too well. To secure an even coating, considerable practice is required if it be done by hand, but it can be easier accomplished by means of a whirler, an appliance now almost universally used by process workers. There are many forms, some of which I have tried, none of which came up to my mind. The one I now use is more elaborate than most, but it has the great advantage of coating and drying in one operation. The first flowing is allowed to run to waste, and the second and third may be returned to the stock bottle through the filter funnel. When the coating is seen to be free from air bells or specks, it is gently dried over a spirit lamp or Bunsen burner, care being taken not to heat more than the hand can bear, or it may be rendered insoluble.

The negative is then placed in a specially strong frame, with glass front about five-eighths of an inch thick, fitted with cross bars and wood screws. The coated plate is placed carefully on the top of the negative, a felt pad or several piles of blotting-paper laid on, and the back well and evenly screwed down to bring all parts into proper contact. It is now exposed for a period of from three to five minutes in a summer sun, or in the shade from ten to twenty minutes (in the winter months the exposure is, of course, much longer), then taken to the dark room and laid on a board, and rolled over with a thin layer of photo-transfer ink, placed in a tray of water to develop, being gently rubbed mean-

while with a tuft of cotton-wool. When the picture is fully developed, and compares favorably with the original, it is strengthened by rolling up as a lithographer does on stone, which is, in truth, no easy matter, having the production of such fine work in view. After carefully overlooking the whole to see if no dots are wanting, and the back with the marginal parts varnished, it may now be said to be ready for the first etch, which it receives in a weak bath :

Water	120 ounces.
Nitric acid	1 ounce.

The bath is gently rocked to and fro, the oxide being brushed off as it gathers, to allow clean and equal etching. When deep enough to catch the finger nail, it is taken out and washed under the tap, then dried. A proof is thereafter taken, and usually handed over to the artist etcher to complete in as many etchings as may be found necessary. Many subjects can be satisfactorily reproduced without the aid of an artist or fine etcher.

Bitumen printing is preferable to the foregoing method, as it saves the preliminary inking and the risk of blurring or thickening the lines or dots, but its slow printing qualities are sorely against its general use. Glancing at this process, I may say that the metal is cleaned and coated with sensitized bitumen as described for albumen printing, but allowed to dry spontaneously, which it does with rapidity. When the necessary exposure has been given, it is developed in a tray containing turpentine, then washed and dried, the back and edges coated with resist varnish, after which it is ready for the first etching. To give you some idea as to the difference in the time for printing, I submit for your inspection a specimen which took forty-five minutes to print in the summer sun, whereas three minutes in the same light would have been sufficient for albumen.

The dusting process is quick and simple, but I have not found it quite so certain in its results.

The process that has "caught on" with fever heat is the one known as the enamel process. There are many formulæ for making the enamel, but the majority are made up of fish glue, albumen, water, bichromate of ammonia, and a few drops of



AN AL-FRESCO TOILETTE.

HALF-TONE FROM
ELECTRO-TINT ENG. CO.,
PHILADELPHIA.

ammonia. Many omit the albumen, but my experience has led me to adhere to it.

The enamel is flowed over the plate and dried with gentle heat, exposed and developed in much the same manner as in the albumen process, but no ink is used. When fully developed, it is dried gently and gradually heated until the enamel assumes a deep chocolate brown. Coat the back and edges as before, and it is ready for etching. I believe that this process is much better adapted for copper than zinc.

I would like to mention that the half-tone process is quite adaptable for litho work, and can be printed direct from the zinc plates, as specimens, which I have pleasure in submitting, or transfers can be pulled, and retransferred to stone, and the zinc plates held as originals, from which fresh transfers could be pulled at any time.

I am most anxious that letterpress and litho should work more together, believing that, with the combination, splendid results could be realized.

Much has been said regarding the photographic profession allowing process work to slip past them. I hear many of the staid come from the would-be teachers of process work, and who seek to induce the profession to take it up, they of course teaching the whole process for the small sum of a few guineas. It is so simple that only a few lessons make people proficient. My own belief is that the professional photographer is gifted with a large share of common sense and foresight, and is quite capable of judging for himself. However, one of the greatest obstacles to the progress of the art is the fact that it is hard to overcome, and many are deterred that if one has surplus money, the art of process work is quite equal to the task of using it up.

In conclusion, it may be well to mention that, in order to make the process as a commercial success, the artistic part is an indispensable factor in the production of blocks, giving not only uniformity of quality, but that necessary promptitude of execution which, in these days of break-neck speed, is everywhere required.



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In conclusion, it may be well to mention that, in order to work out the process as a commercial success, the electric light is an indispensable factor in the production of blocks, giving not only uniformity of quality, but that necessary promptitude of execution which, in these days of break-neck speed, is everywhere desiderated.

CAMERA POSING AS A FINE ART.

ANY woman who can boast a decent gown to her back, whose expression is not forbiddingly sour and whose features are not hopelessly deformed, can secure a likeness of herself at once so truthful and pleasing, so graceful and sweet, she will wonder her mirror and friends never appreciated her points before.

To gain this she must climb to the studio of one of the modern artist photographers, and who consider pose all important for a good photograph. So great is the emphasis they lay on this point, and to such advantages have they studied its effects, that be a woman stout or lean, tall or short, her chances for a satisfactory picture are almost equal to a professional beauty.

But these masters of the camera are autocratic in their studios and she who comes for a sitting must accept their will, not only as to pose but how to dress and arrange her hair. Sometimes a half-dozen costumers must be submitted to the critical eye before a suitable garb is chosen. The photographer's demand is usually for a dress that is white or pale-tinted, since few rich colors show up well before a camera, and an evening toilet is what he is apt to suggest and insist upon.

Nearly every woman, he rightly argues, appears to best advantage with bare arms and throat, in soft, dainty draperies, that cover a multitude of sins, while on his own assurance the writer has it that in nine cases out of ten a woman is most graceful when seated and her full figure photographed. Only that tenth individual can stand easily and gracefully, and he forbids the use of any more elaborate ornaments than pearls and flowers, since a vast array of jewels is not considered in good taste, and polished cut stones show white and dull in a photograph.

"A stout woman," he says, "should always wear an ample train, cut the shoulders of her decollete bodice open in a point, have her elbow sleeves full but soft, and be seated in a high gothic-backed arm-chair. Her hair must be heaped on top of her head, the tip of a pointed slipper showing, her body inclining slightly forward, for then, when the light is cast on her from above the

outline of waist and bust are softened into shadow. Later the plate is cleverly treated before any prints are made from it. The under throat is touched out, or a shade laid in to hide it, just as we round off sharp elbows and the shoulder points of thin women or soften the profile of a pointed chin. In addition we are apt to cut up the corners of the lips to give the face a brighter and more amiable expression.

"Throw cross lights on the thin girl whose collar bones are prominent and thereby smooth them completely, and soften faces by an artistic arrangement of the hair. Also supply a too slender woman with an abundance of drapery, and bring both bare hands in view, for scarcely a pair of feminine hands but, when studied and properly posed, will show up as the most graceful ornament in a picture.

"We no longer tolerate the old attitudes of the head upon the hands, of photographs in fancy dress, in theatrical or masculine poses and in artificial light. The face is now only slightly turned from full view, drooped ever so little, the eyes glancing upward without straining, which lends the face a soft, half-plaintive expression, while the whole photograph is deepened by perspective background done in soft shadowy figures. A lawn vista is given a pretty girl in white who bends over a rose-wreathed hat in her lap, or a suggested conservatory entrance or distant tall painted window with palms and draperies."

The heedful photographer will always permit his subject to retain her fan, a handful of flowers or scarf in one hand. Repose has taken the place of attitudinizing save when occasionally a studied copy is made in pose of one of Romeny's portraits and the whole is printed in carbon and the proof mounted on a very dull white card that leaves a white margin all about the photograph. These prints, always longer than they are broad, are used for handsome full length pictures that show an elaborate background. For busts an oval print is given mounted on a great expanse of board and meant to fill gilt ribbon frames.

Never more in favor than to-day among the fashionable women are grouped pictures to which three persons at most are admitted, and their poses carefully studied with a sharp eye to naturalness

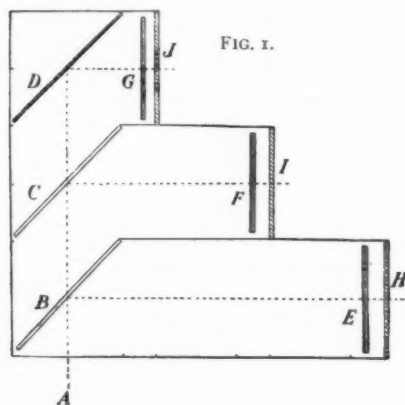
and grace. Sisters in dancing gowns are taken just floating off to waltz in each other's arms, or one leans against the piano while the other half turns on her music tabouret to speak. A mother and daughter sit in low chairs beside a tea-table chatting over their cups. Two pretty matrons in evening gown read a note one over the other's shoulder, while for children the photographers are borrowing suggestions from famous artists, as Sir Joshua Reynolds, Sargent, Greuze and Madame Le Brun.

[COMMUNICATED.]

THE STEREO-PHOTOCHROMOSCOPE.

THE original Ives photochromoscope, although only a monocular instrument, contained seven reflectors, six lenses, and three color screens—sixteen optical working parts altogether. The new stereo-photochromoscope has only six optical working parts—four pieces of colored glass and two lenses.

Such simplification of the photochromoscope was made possible only by adopting chromograms, which are made in sections,



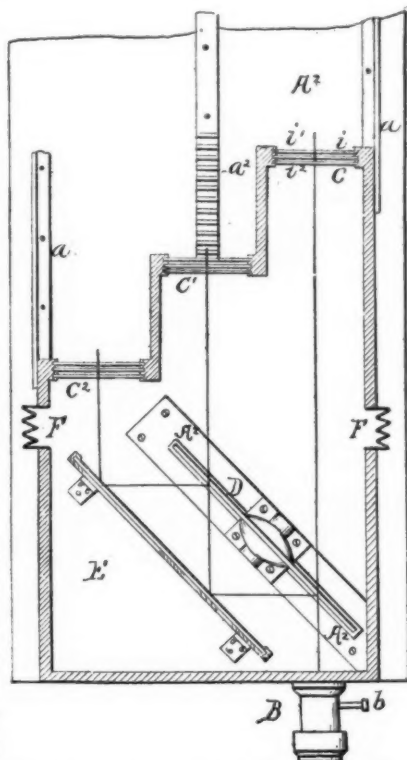
on different pieces of glass; and I rejected the plan as unsatisfactory until it occurred to me that the sections might be hinged together and used in such a way as to be almost as convenient to handle as the one-piece chromogram. In order, however, to change such chromograms quickly, an instrument had to be devised which would permit the sections to be dropped into their

respective places by a single movement of the hand like the one-piece chromogram in the older photochromoscope. This I accomplish by making some important improvements upon a crude

suggestion thrown out by Charles Cros nearly twenty years ago. I have lost the reference to Cros' publication, but if my memory serves me well, it was a suggestion to blend three colored images by the use of one mirror and two pieces of plane glass arranged as shown in the vertical section Fig. 1: A is the position of the eye; B, C, clear plane-glass reflectors; D, silvered mirror; E, F, G, colored glasses; H, I, J, photographic positives.

It was not claimed for this arrangement that it was of any use except as an experimental demonstration, because the plane

FIG. 2.



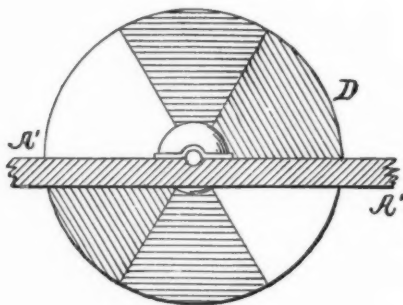
glasses gave double reflections, which destroyed the definition of the images. Some years after, Antoine Hippolyte Cros sought to find a substitute for the plane glasses which should be free from this defect; and by means of a rapidly revolving wheel having four plane silvered and two clear open sectors in combination with another plane silvered mirror, actually blended three images without any doubling of outline. The arrangement is shown in the vertical section Fig. 2. At one instant of time the light passed directly from C to the eye, through an open sector; at the next, light from C passed through an open sector to the mirror E, then on to a silvered

next, light passed from C 2 to the mirror E, then to a silvered sector, then back to the mirror E, then on to another silvered sector, and from that to the eye. The wheel (Fig. 3) was put into

sector, and from that to the eye; at the motion by means of a wound-up cord, as for spinning a top. Such an instrument would necessarily be large, clumsy, costly, and troublesome, and I do not know that Cros ever even showed one in public; but it is of interest as being the first suggestion of an instrument even theoretically capable of producing such a blending of the images as it was intended for.

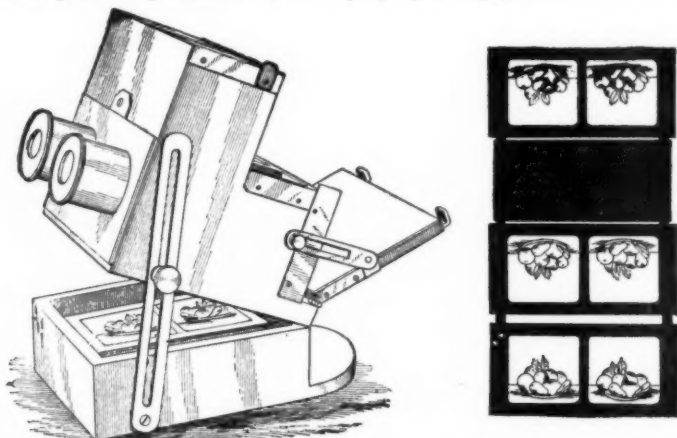
What Antoine Hippolyte Cros sought to do for the step form of photochromoscope by means of his revolving wheel, I accomplished far more perfectly by a means which in comparison is ridiculously simple, namely, by substituting colored glass reflectors for the ordinary plane glasses used by Charles Cros. As I

FIG. 3.



pointed out in a paper read before the Society of Arts in London, in May, 1893, the images will not appear doubled if the blue picture is reflected from a yellow glass and the red picture from a cyan-blue glass. But not even the folding chromogram and the colored glass reflectors were sufficient improvement to make of it a satisfactory working instrument, because the perpendicular position of the steps was unsuitable for the ready insertion of the folding chromogram, and also necessitated either a duplication of parts or enormous increase of size to make it stereoscopic. The arrangement was also very unfavorable for securing suitable illumination. All of these defects I remedied by making what was formerly the base of the instrument one of its sides and hinging

it to a base board or tray, so that it could be readily inclined to the most favorable angle for illumination and easy vision. Still another defect remained; the image, owing to its distance from the eye and the small angle subtended, appeared much smaller than that in the original Ives' photochromoscope. This defect was remedied by changing it to a two-step instrument, in which the first image is not reflected at all, but seen direct through the two colored glasses which reflect the other images. Such an instrument is shown in Fig 4, and the folding chromogram in Fig. 5. A sectional view of this instrument is shown in my United States patent specification, filed July 3d, 1894, and issued De-



cember 18th. Owing partly to the shorter distance from the eye to the chromogram, and partly to the fact that a more convex eye lens is required for distinct vision, the image has apparently four times the area of that seen in the three-step instrument, and the objects appear "life size."

The chromograms unfold automatically as they are picked up, and fold up again as they are laid down by giving the hand a slight to and fro motion. They are dropped into place in the photochromoscope by a single motion of the two hands and lifted out by a single motion of one hand. The negatives and positives are made, in the first place, on a single 5 by 7 plate, the positives being cut twice in two for mounting on the hinged cardboard frames.

F. E. IVES.

PHOTO-MECHANICAL PRINTING PROCESS.

ERNEST EDWARDS.

(Continued from page 117).

A PHOTOGRAVURE plate is an intaglio plate where the intaglio is produced by photography instead of by hand.

Photogravures are produced by two processes; one is called the building or deposit process. In the other, the photogravure plates are produced by etching.

We must bear in mind the behavior of a steel plate in printing. It is composed of deep, fine, incised lines, out of which the ink cannot be wiped. In a photogravure plate it is different; there are no lines, only the tones and half-tones in broad masses. An intaglio plate is depressed where these tones and half-tones exist. It is plain some method must be adopted to give these spaces a grain or ink-holding capacity, or else when the plate is wiped, there would be nothing to prevent the ink being wiped out of these depressions. To obviate this, the printing plate must, as a primary necessity, possess a grain or ink-holding capacity. In the deposit process, bichromated gelatine is exposed to light under a negative, and a picture obtained, not in light and shade, but in relief and depression. To produce the necessary grain, sand, or powdered glass, or some equivalent gritty substance has been mixed with the gelatine and gives a grain to it. On this gelatine grained picture, produced by photography, a copper electrotpe is deposited or built, such electrotpe having all the necessary qualities for intaglio printing. The admirable work of Goupil is done by this method. In the reproduction of works of art it has never been surpassed, though it is fair and proper to add that a large proportion of its merit is due to the amount of exquisite artistic handling and finishing which is put into the plate after the process work has been completed.

The other method of preparing photogravure plates, and by which by far the greater number is made, is by etching. Provision is first made for the necessary grain by dusting the copper plate on which the etching is to be done with powdered asphalt

or resin, and heating the plate sufficiently to melt it; these grains of asphalt, of course, protecting the copper during etching, which goes on round them. The copper plate more or less covered with very fine particles of melted asphalt or resin, is then ready for the reception of the gelatine "resist," properly so-called, because its function is to resist, in the proper proportions, the action of the acid with which the plate is to be etched. To prepare the "resist," the services of bichromated gelatine are again called into requisition. A sheet of bichromated gelatine is exposed to light under a positive (not a negative, or the subsequent operations would make our final picture a negative) and attached to the grained copper plate by atmospheric pressure. The parts of the bichromated gelatine which have not been acted on by light, remain soluble and are dissolved away with warm water. There remains an insoluble picture of varying degrees of thickness. This resists in varying degrees, according to its thickness, the action of the acid in which the copper plate, with its attached "resist," is now placed for the purpose of etching. When the expert has decided that the etching has proceeded to the right point, the action is stopped, the gelatine "resist" removed, and the plate proved. Do not forget that the necessary grain has been produced by the acid not etching where the asphalt has protected the copper, thus forming small fine grains. Any defects may now be removed and handwork added to the plate. It is desirable to avoid this as far as possible, in order to preserve the fidelity of the photographic reproduction. It is rarely safe to supplement the work of the artist with that of another hand.

A word about steel facing. After the plate has been proved, and approved, it is ready for printing, but the copper plate would not wear for twenty impressions if there were no means of protecting its surface. This necessary protection is effected by electric deposition on its surface of an exceedingly fine, thin coat of steel. When steeled, the plate should yield thousands of impressions. If the steel wears at all, the coating is easily dissolved off, and a new coating of steel deposited.

The color of ink in which a photogravure is printed is op-

tional, but there is a very beautiful method of printing photo-gravure plates, in which the plate is inked in locally with a variety of colors, in fact, painted, almost as a painter would paint his canvas, with this advantage, that the design—the groundwork—is prepared for him. When he has laid on his colors, his picture is transferred to paper. The design or groundwork remains, again ready to be painted.

It may readily be conceived that such a process of printing is slow indeed, two or three impressions a day only being obtainable from a moderate sized plate. Perhaps one is hardly justified in calling it photo-mechanical printing. But it is an art process, and, artistically done, the result fully justifies the labor expended.

In Europe, Collotype is the name not infrequently given to the group of photogelatine processes, *Kollos* being the Greek word for glue or gelatine; but gelatine is the English of it, and I fail to see any good reason why my nomenclature of photogelatine—which is the common-sense one—should not be adopted.

Photogelatine covers a multitude of names, *Albortype*, *Helio-type*, *Artotype* (barbarous name), *Lichtdruck*, *Indotint*, *Autoglyph*, and I don't know how many more, but they all mean about the same thing, and that is, printing by the lithographic method from a surface of bichromated gelatine which has been acted on by light through a negative. Referring to the method of printing as being new; it is true the principle of lithographic printing—that is the repulsion of grease and water—applies to the printing of photogelatine plates. But in practice, the method differs so greatly from that of lithographic printing, that I am justified in calling it a new and peculiar method. The photogelatine process in common use consists in the preparation on a glass plate of a layer of bichromated gelatine on which light is allowed to act through a negative. By exposure to light, the parts where light has acted strongly are rendered waterproof; they do not any longer absorb water, the parts where light has acted not so strongly, only partly absorb water, while the parts where light has not acted, retain their normal property of absorption. Consequently such a plate, being sponged with water, absorbs it variously and in parts not at all. In those parts where

it has not absorbed water at all, there is no reason why grease should not adhere, and it does adhere. Where water is partly absorbed, grease also partly adheres, whilst where the gelatine has fully absorbed the water, grease will be wholly repelled. Lithographic ink is grease with color added to it, and a roller charged with such ink and passed over such a plate, after it has duly absorbed its quota of water, speedily reveals the light-produced image. The picture so produced is transferred by pressure to paper, and the operation repeated. Of late years, power presses have been used in the production of photogelatine work, both in this country and abroad.

The last decade has seen the rapid development of the production of photographs in printer's ink, and the application of photography to the printing press. The next decade will see the rapid development of the production of photographs in their natural colors, in printer's ink, and the application of photography in natural colors to the printing press. I venture the prediction that this result will be attained by that three-color process which, though now only in its infancy, is producing the most remarkable results the world has yet seen.

It is well understood that there are only three primary colors, yellow, red, blue. From varying combinations of these three, all the colors in nature, or in art, are constructed. The possibility of the application of photography to the reproduction of colors on these lines, was propounded long ago by the fathers of photography, and in the early history of the art it was suggested that three negatives should be made, each representing one of the primary colors. There was one difficulty that had first to be overcome. Till a comparatively recent date, photography was unable to give correct color values; we all know that yellow, which in nature is light, was reproduced as dark, whilst blue, which in nature is dark, was reproduced as light. Thus photography did not reproduce the correct relations of light and dark, but gave an entirely different rendering of them. Of late years, the advance in the science has enabled us to secure results giving the true, or orthochromatic, effects. As soon as this became possible, it became also possible, by means of colored screens, to

exclude either of the three primary colors from the action of light in the formation of a negative. The three-color process is based on this power. Three negatives are made,—one through a colored screen allowing only the red rays of the spectrum to pass—one allowing only the blue rays to pass—and a third transmitting only the yellow rays. These three negatives, each representing a primary color, are printed in the three primary colors, and superimposed. Just as the three primary colors give all combinations of color, the superimposition of the pictures should give all their combinations. It does so,—not perfectly, but approximately,—approximately, only, for various reasons. In the first place, the color screens, or ray filters, being, of necessity, of artificial coloring matters, can only approximate the true colors of the spectrum. Again, the pigments used in the reproduction of the prints are only approximate and imitative. After all, pigments are only man's efforts to imitate nature. Can an artist do more than imitate nature? Is the blue of an artist the true blue of the sky? How can photography, using the same pigments, be expected to approach nearer to nature than the artist? Again, is it necessary always to insist on an exact fac-simile reproduction—and failing this, to say that the process has failed, and is no good? Take the case of the reproduction of a painting—is a photogravure of it a failure, because it does not reproduce any of the colors of the original? Then why should a three-color print be a failure because it does not reproduce exactly all the colors of the original? It seems to me, that a three-color print, if it is pleasing and harmonious in color, gives to-day the truest rendering of the artist that has yet been achieved.

Perhaps the most formidable difficulties yet to be overcome, are in connection with the printing of the plates, whatever the process that may be employed for that purpose. But that these difficulties will be overcome, is to my mind a certainty. We have to speak to-night only of the methods so far used. These are—surface printing from half-tone,—lithographic printing—and the photogelatine method. Whatever method be employed, the keystone is, first of all, the three-color negatives. If the method

of surface printing is to be used, half-tone plates are made from the three negatives and superimposed impressions printed from them in the primary colors. The objection to this method is, that there is no true gradation, each color consisting of a series of uniform dots of color varying only in size and separation. Working, however, under this system, additional printings are often added to obviate this objection and to increase the color effect. The advantage of surface printing is in the rapidity and certainty of production.

The method of lithographic printing is also advantageously used in three-color printing. But the want of a reliable process of making a transfer, where the gradation is broken up into a fine grain, has not yet been filled,—it probably will be in the near future. The results, I think, will then be better than in surface printing from half-tone plates.

The advantage of the photogelatine method of printing,—and it is a very great advantage, so great that I believe it to be the best method yet used;—the great advantage of this method is that it gives true photographic gradation. Hence, in the superimposition of the three colors, each one having every gradation of its color, the completed picture has every gradation of every combination of the three colors, and that is every gradation of every color.

The process of printing is slow, and the want of uniformity in the editions has been referred to. In reply, I would say that it is but a short time ago the possibility of producing such results at all as we have in this room to-night, would have been doubted. But they have come, and they have come to stay. By persistent effort, the difficulties ahead will be overcome, for they are surely no greater than those which have been already conquered. Even at the present time, editions of considerable number and reasonable uniformity are being produced from power presses in three colors by the photogelatine process, and I have no doubt that, presently, sufficient uniformity in printing will be secured. After all, what method of printing is uniform? Even in engravings do we not distinguish between Artists' proofs, proofs before letters, prints, and so forth?

I can only express my belief,—a belief born somewhat of experience—that the photogelatine method is that which gives the truest and best three-color reproductions.

What is to be the outcome ?

Wood engraving has almost ceased to exist, steel engraving is suffering, engraving on stone will suffer, but at the other end it is progress—and progress means, where one industry dies, two new ones are born. Art never dies. Art originates. Art invents. Art produces, not reproduces. Our future is to reproduce art faithfully, and any process which tends to that end is progress. I believe there is no future for the wood engraver, the steel engraver, the lithographic artist, so far as they only reproduce. As such these industries will die out and their places will be taken by those photographic methods which faithfully reproduce without the intervention of another's hand. And I believe, too, that where ten men have lived by the old industries, a hundred will live by the new ones.

Removing Spots from Gilt Frames.—Gilt frames are liable to become spotted and look bad, while it is, as a rule, difficult to remove the spots. Rubbing does not answer, for the stain sticks tighter than the gilding itself, and washing is liable to loosen the gilt if put on with gum or dextrine. The *Papier Zeitung* recommends the following method of renovating gilt frames: It consists in applying with a camel's hair pencil a gum solution to which has been added gold bronze having the color of the frame. Before mixing with the gum water the bronze must be washed with water until it runs off perfectly clear. If one application does not suffice it may be repeated until the spot entirely disappears, but of course one coat must be dry before the next is applied. Spots treated in this way look very well at first, but it will not last, for it is not able to resist the moisture in the air unless it is especially prepared. For this purpose an ordinary bristle brush is rubbed with a piece of yellow wax until it is somewhat sticky, then it is passed very lightly over the spot several times as when dusting it. This gives it a very thin coat of wax that hardens in two or three days; in the meantime it must be protected against dust.

THE NORTHWESTERN PHOTOGRAPHERS' ASSOCIATION.

IT was a proud week for the promoters and members of the Northwestern Photographers' Association, and one hundred and seventy-five photographers and fifty-nine dealers and representatives were there to share in the glory of the event. No convention ever had a better building in which to exhibit work—large, well-lighted, elegantly-arranged, and handsomely decorated. The ground floor of the building was devoted to manufacturers and dealers. Beginning on the right hand side of the hall, as you entered, was the display of the American Aristo Co.

The display of the Eastman Kodak Co. was located directly opposite that of the American Aristo.

Next came the display of George Bates, representing Thos. H. McCollin & Co., of Philadelphia, with a line of the latest novelties in flash lights, backgrounds and embossing machines.

At the rear end of the hall was the display of Zimmerman Bros., of novelties in backgrounds and accessories. These were painted on burlap in colors, and were a decided departure from old ideas.

A. Wunderlich, Burt, Bintliff & Co., and Snyder Bros., of Minneapolis, were located in the center of the hall.

The local photographers' displays were on the second floor, and comprised forty-six large and elegant exhibits.

Mr. J. A. Brush, of Minneapolis, had the largest display, made up of cabinets and paris panels. Next, in the number of prints, was the exhibit of Carl Theil, of Duluth.

Mr. Opsahl, of Minneapolis, had a nicely arranged exhibit, all framed and very attractive.

Mr. Fred Johnson, of Duluth, was represented by his study, entitled "Urania and the Heavenly Muse." Mr. Zweifle, of Duluth, also had a very attractive study, entitled "An After-Dinner Story."

F. E. Haynes, of Minneapolis, showed a fine collection of large work.

Mr. N. T. Bishop, of Minneapolis, for a display of cabinets and paris panels, received the highest award in his class. Mr. F. Koester, of St. Paul, entered large work.

The entry made by the president of the Association was one of the finest in the hall, but was not entered for competition.

The Holmes Studio, of St. Paul, had one of the best entries made from this city.

Mr. Harry Shepherd, of St. Paul, had a collection of photographs on exhibition which were decidedly unique and original, and attracted by their oddity as well as their excellence.

Blackburn, of Grand Forks, sent a very large selection of his studio work, and received the highest rating outside of St. Paul, Minneapolis, and Duluth.

Steward, of Glencoe, was a close second, while Austin, of Austin, was third, with a neatly arranged exhibit.

Lee Bros., of Minneapolis, received the highest rating for cabinets only.

Mr. Lind, of Marinette, Wis., had an exquisite collection of cabinet work.

Mr. Varney, of LaCrosse, Wis., had a large collection.

D. H. Brown, of Chippewa Falls, received the third highest award for Wisconsin in Class B.

Furdick, of Milton, Wis., received a very high rating on view work.

Ferryman, of West Superior, carried off the palm for Wisconsin, receiving the highest award for that state.

Jerome Wiltse, of Mitchell, and D. C. Root, of Woonsocket, represented South Dakota.

H. L. Olson, of Montevideo, Blissenback, of Mankato, Bannister, of New Richmond, Wis., all made a nice showing of views and portraits.

Bish, of Chippewa Falls, Bangs, of Sleepy Eye, and Douglas, of Osage, Iowa, had neat displays.

Peavey, of Faribault, exhibit was small but a good one.

Bank Bros., of Duluth, and Nanson, of Fargo, were also represented. There were fourteen entries of cabinets only, and they

were all good, the highest being rated 84 per cent. and the lowest 68.

Haas Bros., of St. Paul, entered architecture and landscapes, and received the highest rating of any exhibitor in any class, namely 93 per cent. in architecture, and $95\frac{2}{3}$ per cent in landscape. Sargent, of Taylor's Falls, had a magnificent collection of large views of the Dalles of the St. Croix, which were the most admired for their scenic beauty.

THE FIRST DAY.

The delegation from Duluth were the first arrivals, reaching the Convention hall at 7 a.m., and were followed quickly by photographers on the Great Northern and other lines, so that by 10 a.m. the Convention began to be predominated by out of town photographers, and by noon of the first day sixty-five members had arrived from surrounding cities.

At 3.30, in the absence of the Mayor, who was unable to attend, the address of welcome was delivered entirely by the president. The minutes of the preceding meeting were read by the Secretary, F. H. Lloyd.

The president then appointed the judges, viz.: I. E. Burt, of Minneapolis, C. A. Zimmerman, of St. Paul, and F. Bonnel, of Eau Claire; no objection being made this selection was duly confirmed.

As the adoption of the by-laws and constitution was next in order the secretary stated that the committee appointed to draw up the constitution and by-laws, after giving the subject much thought and study, had followed very closely the constitution and by-laws adopted by Ohio and Nebraska, and hoped the Association would approve the same.

After the reading of the constitution and by-laws a motion was made that they be adopted as read, which was seconded and the motion carried.

Nominations for the next meeting-place were in order. Mr Wunderlich, of Minneapolis, stated: "It gives a great deal of pleasure to note the success of the Northwest Convention, and we think that St. Paul has done herself royal. Now we have

another city in the northwest that we think a great deal of, and we call it the twin city to St. Paul; I therefore place the City of Minneapolis before the convention to be the next meeting-place of the Northwestern Photographers' Association," seconded by Mr. Opsahl. St. Paul and Minneapolis being the only nominations the president declared the nominations closed, and the tellers were then appointed by the Chair, viz.: J. W. Bangs, and J. C. Varney.

While waiting for the counting of the votes Mr. Lloyd stated that he had been requested to announce that the St. Paul Commercial Club had extended to this body an invitation to their Club Rooms; he also announced that Mr. Mora, of the Eastman Kodak Co., would deliver an address in the morning on "Printing and Toning."

The tellers then reported, Minneapolis being declared as the place for the next meeting.

The evening session was called to order promptly at 8 p.m., and Mr. Hetherington made a short address preliminary to conducting the evening work, which was to be **Practical Lighting and Posing of Subjects by the Aid of Electric Light**. In substance Mr. Hetherington said, We are here to learn something that will be of practical benefit to each and every photographer in attendance. Unless this end is accomplished we will go home with a feeling that it did not pay us to attend the convention. In order to accomplish what was desired in this respect every member must make up his mind to work and work hard for the general good of his brother photographers. If a man knew something in regard to manipulation in lighting, printing, toning, mounting, developing, varnishing, posing, or any of the little details of the photo business, it was not only his privilege but his duty to not keep it locked up in his little heart with the key thrown away. He said he was proud of being the friend of nearly every photographer he had ever met, and there was not one among them who had not made him feel as welcome to the privileges of their studio and the knowledge they had gained as he was to the sunshine of the sky.

This address was followed by the practical work of the evening,

posing and lighting. A lady model had been engaged, and Mr Hetherington held the interest of the audience for over two hours, while he handled this subject under the electric light, to the evident satisfaction and delight of every one present. In this connection he said the artist (not "operator," as he objected to that name), should never permit himself to be dictated to, but should always be master of the situation, and strive to make himself so competent that he could grasp the possibilities of a subject or group at a glance, and know just what to do with them the moment they came under the sky-light. Another point was that in a sitting position the subject should not be placed to sit lower than the knees, as that position made the limbs, from the hips, stick out at right angles from the body, and made very ugly straight lines, while the beauty of a position lay in rounded lines and graceful curves.

In groups of two—marriage groups—where the bride wears white and the groom black—have the groom stand in the stronger light and the bride in the shadow, so as to overcome as much as possible that harsh contrast which is so often noticeable where black and white draperies are photographed together.

Continuing the speaker said that the eye of the subject was the life of the expression,—as the eye was so was the picture, either lifeless, or animated, vacant or expressive, dreamy or wide, awake.

The morning of the second day the meeting was called to order at 11 a.m. to listen to the address of Mr. T. H. Mora, of the Eastman Kodak Co., on **"Printing and Toning,"** and the **"Permanency of Aristo Prints."** Fully one hundred members occupied the chairs and gave careful attention to the speaker's words.

Mr. Mora said: "Good clean prints cannot be expected from a dirty printing-room; remember that it is absolutely necessary to have your printing and toning room, as well as your trays, clean, if you expect good prints." In vignetting the greatest fault of the average printer was that he placed his vignetter too close to the negative and did not allow much room between the two for the diffusion of the light so necessary to that gradual blending which constitutes the beauty of a perfect vignette

In printing a weak negative be sure to print it where it will print slowly, as this method will give a much stronger print than where negatives of that description are printed in the sun. Mr. Mora contended that all aristo prints were permanent if properly handled, whether Solio, American, Kloro, or any other brand, but that insufficient fixing had more to do with prints discoloring and fading away than any other cause, and that this was accounted for by the fact that most printers tried to fix too many prints in a given amount of solution. Mr. Mora met with some opposition on this point, but maintained that he was right, and that experience would prove it.

The afternoon session was even more largely attended than the morning session, and Mr. Hetherington again entertained the photographers with that interesting talk of his entitled: **"From the Reception Room to the Finished Picture,"** the substance of which is as follows:

The reception room is too often neglected, either too little furniture, the same furniture, draperies and display pictures used too long, or too much furniture and too many pictures, the whole making a stuffy, crowded, inartistic arrangement. Change your furniture and pictures as often as possible. Use only a few choice display photographs, and arrange them in the most artistic manner. Be sure to have a bright person to wait on your customers, one who has an eye to business and is at the same time polite and accommodating; have this person work for you on the percentage plan, if possible, giving her or him, as the case may be, a certain percentage of receipts. You will find this plan pays.

The operating room should be carefully tinted so as not to reflect bad lights on the subject. If you can only have a few accessories, have them good,—shun cheap backgrounds and accessories; remember that your whole reputation as an artist depends on your operating room, and you cannot afford to slight any of the details that go into the composition of your pictures. Have the proper things to work with if you have to go without a carpet on your reception room.

In sending subjects to the operating room always refer to the operator as an artist; it will make a great difference in the im-

pression on the subject. If you were going to have your portrait painted you would not expect the man who was going to do the work to be referred to as the "painter."

Do not limit the artist in the use of plates. It is presumed you have a man of ability and judgment in your operating room, and he ought to be competent to determine the number of exposures to make to serve the best interest of your business.

The retoucher should have proofs of each negative in the sack with the negative. This is a great aid in seeing points that might otherwise be overlooked.

The artist and the person at the desk should look over the proofs together each morning, as they are the two people that come directly in contact with the subject.

Choose the backgrounds for the subject, don't use large chairs and balustrades for small children. Work bald-headed subjects across the light, and reduce the shiny effect of the skin by using Strauss' Modeler, one of the most useful articles in an operating room.

The dark room should be scrupulously clean and distilled water used in making all chemicals.

Friday morning the large body of photographers gave careful attention to Mr. John Edgeworth while he spoke on the "**Use and Care of Lenses**," a synopsis of this discourse is as follows:

I have here two lenses—one a portrait lens, and one a rectilinear lens. Now if you were going to make views, which of these lenses would you use? You would naturally take the rectilinear. Now if you were going to make portraits you would naturally pick out the portrait lens. I do not think there is one in this room who would pick out the portrait lens to make views with. But how many of you are making portraits with view lenses; the manufacturer made them to make views and groups with, they were never manufactured to make portraits with. Now here is an example:

One man has a very ordinary gallery, but he has picked out a first-class portrait lens, his work is very soft, round, and beautiful. His competitor wants to outdo him—fits up a beautiful place with fine accessories, but the lens does not show much, and

he buys a cheap rectilinear lens, because he is told his pictures will be sharp. But when he compares his work he wonders why his pictures are hard, and nothing in the blacks, no half-tones, no definition in his whites. He may use the same dry plates, same chemicals, and the same paper, but the effect is altogether different.

This country has been flooded with cheap French lenses, a great many not properly adjusted. Although there may be pearls among them, yet you have to hunt to find them. They are composed of glass and brass, but a great deal more brass than glass. I have been asked repeatedly why the sample pictures I carried looked so different from those usually shown in show cases. They used Cramer plates but could not get such effects. I invariably found those men using rectilinear lenses to make their work with, while the sample pictures I carried were made by the best photographers in the country and with the very best portrait lenses.

Now in the care of lenses ; they should be cleaned every week with alcohol and polished dry, you will find no hazy blacks if you will keep your lens in perfect order.

Do not let your lenses get so you can write your name on the glass ; if your eyes are dim you cannot see, neither can the lens. Cleanliness is before godliness in the photo business.

If your lenses are not properly adjusted send them to some optician, and have them properly adjusted, or adjust them yourself. If your lens is too short focus, cuts sharp on the surface, separate the back lenses and see if it does not work better. Especially if it is an old style lens, I have found it gave beautiful definition and softness.

Our Illustrations.—Girard College, Philadelphia. A specimen of commercial work, made by the gelatine dry-plate process. It well illustrates the opportunities offered to the professional photographer as well as to scientists and amateurs for the production of his own printing plate, either direct or by the half-tone screen process. Our extra illustration, "Curly Locks, wilt Thou be Mine?" a charming child-study in photogravure, engraved and printed by the New York Company.

The Editorial Dropshutter.

Encyclopaedie der Photographie.—We are in receipt of Nos. 11, 12 and 13 of this exhaustive work, which is being published by Herr William Knapp, of Halle a.S. No. 11 of this series, is a very exhaustive treatise on Photo-Lithography, by George Fritz, vice-director of the imperial printing office at Vienna. Every department of this subject is masterly handled. No. 12 of the series is Ottomar Volkmer's "Photography of the Invisible," such as photographing a flying missile, sound and light waves, compressed air, etc. No. 13, *Der Platindruck* (The Platinotype) by Arthur Freiherr Von Hübl. All of the various methods of platinotype printing and toning are described; the text is embellished with seven illustrations. The Messrs Knapp, at Halle, deserve the thanks of the photographic world for their liberality and enterprise in giving us such publications as this Encyclopaedie, and the current works of Eder, Miethe, and other authorities of equal prominence.

The Photographers Association of America.—The Executive Committee of the P. A. of A. met again at Indianapolis, March 6th, the purpose being to construct a new Constitution and By-Laws. The motive in view being to unite with the State organizations and form an amalgamation to meet triennially, and to call a so-called Congress of the states, etc. The entire matter has been given a great deal of thought and consideration, and will no doubt be one of the chief matters to be considered at Detroit. Full particulars of this important movement will be given in the JOURNAL for next month.

Another Solution of the Color Problem.—At the meeting of the Photographic Society of Hamburg-Altona, Carl Zink's Photo-poly-chromoscope was explained, as was also the method of making the original negatives by the same apparatus. Herr Schwier, editor of *The Deutsche Photographen-Zeitung*, showed a colored photograph of the spectrum by Herr Krone, also a landscape in natural colors by the Lumiere Brothers of Paris. The most startling surprise, however, was a dozen different positives, 5x7, in the colors of nature, made upon ordinary gelatine dry plates in the camera by Freiherr Julius Von Kolkow in Groningen. The subjects were natural flowers photographed in an ordinary studio. Dr. Schwier distinctly states that these pictures were not printed copies on paper or superimposed sheets of celluloid.

or gelatine, nor were they covered with a prism similar to the Lippmann experiments, but were a diapositive in natural colors [evidently a positive in colors on the glass side of the negative.—ED.] when looked at in any reflected light. When held up to the light, *i.e.*, when examined by transmitted light, the color effect was lost, a grey monochrome being the result.

The Royal Photographic Society, which became incorporated on the 1st of January in this year, have determined that the Society shall hereafter consist of two classes, Members and Fellows. In future, no members will be admitted to the fellowship until they have given the Council satisfactory proof of the possession by them of suitable qualifications for the title F.R.P.S., which in this way will become a guarantee of distinct ability on the part of its holder in either scientific or artistic photography. The large accession of members to the Society within the past few months has rendered its migration to larger and more convenient premises imperatively necessary, and the Council have this matter now under their consideration.

Lehrbuch der Praktischen Photographie.—A new text-book for the practical photographer and advanced photographic student, by Dr. Adolf Miethe, Hon. member of Royal Photographic Society of Great Britain. From the press of William Knapp, Halle, Germany, who are now the most extensive publishers of photographic literature in the world. In the present instance they seem to surpass themselves if such were possible. The fact of Dr. Miethe being compiler of the new work is a guarantee for its excellence. The book is intended to be a practical and theoretical guide and book of reference in all departments of the art. It is to be issued in nine to ten parts, at one mark (twenty-five cents) each.

Worse than Photography.—A circular has been issued in New York and widely distributed among artists, in which the question is opened for discussion of how a painter, especially if he be married and not famous, is to find living apartments within the precarious income he is able to earn from the sale of his pictures. With few exceptions there is hardly a place in New York where the artist may find a studio attached to a set of living-rooms that include a kitchen, and where he may, at a moderate rent, find proper accommodations. The rent of the ordinary studio, added to the cost of a house or an apartment, swells the annual living expenses to formidable proportions, and, besides, it is easy to understand how much more convenient it would

be to have all in one. An effort is being made to try and interest some capitalists in the construction of a large apartment-house that will have all of these conveniences, and it is thought that such a building would pay as an investment, as well as being a help to many struggling artists.

Cincinnati School of Photography.—The first regular session of this new venture will begin Monday, April 1st, 1895.

The faculty will consist of W. N. Brenner, teacher of negative making, lighting and posing under the skylight, dark-room work, and retouching; George P. Scull, teacher of landscape and outdoor photography, the making of lantern slides, and associate teacher of the art in general; D. K. Cady, M.A.B.L., lecturer on the history of photography, chemistry as applied to photography, photographic optics, and the application of art principles; Richard Smallwood, teacher of printing, toning and mounting.

The aim of the school it is stated will be to provide instruction in the photographic art particularly, from the start to the finish, by a well-rounded and systematic course, enabling students entering with a view of adopting the art as a profession, to engage in it fully equipped and able to compete successfully with others in the same line. Also to give amateurs, or those seeking instruction solely for the pleasure it affords, the best opportunities for acquiring the art. To this end frequent excursions to the different parks of the city will be made under charge of the teacher of this department. This branch of the school will be given equal prominence with the other.

Up to this date no avenue to learn the profession of photography has been open to the students in this country except through the medium of apprenticeship, or serving a term with a photographer in the business. It is sufficient to say of these methods that one requires a service of several years, and the value of both systems depends upon the status of the photographer as an artist and "up to date" in his profession. Water will not rise above its source. One may learn the mechanical part of photography in this way, but fail even to get a glimpse of the art side of it, which is very much like the play of Hamlet with the character of Hamlet left out. The failure of so many to get on with photography as a business can be attributed to this lack of artistic training. For these reasons special attention will be given to the application of art principles, lighting and posing, and the proper use of accessories.

The new enterprise has our best wishes for a permanent success.

Pictures by Telegraph.—The following comes from Chicago: A special to a morning paper from Duluth says that W. W. Lowd, train despatcher of the Northern Pacific Railway, yesterday gave a successful exhibition of his invention for transmitting pictures by telegraph. The test was made in the presence of a number of railroad officials. One of the pictures sent over the wire was that of a boy, and the reproduction was exact. Late developments showed the faintest details can be transmitted, even to the shading of the features of a person or a smile or a scowl. A cut was sent over the wire, showing the collision between the Elbe and the Crathie. Mr. Lowd now has his device in the Patent Office, and until that is secured he does not intend to explain the method of his invention.

Electricity and steam.—There are few sights more fitted to convey an idea of power than a steam locomotive just starting or arriving; the whistling and roaring of the steam, the throbbing in the smoke-pipe, the tremor of the ground, lead the mind to expect a proportional effect, as from some animate monster. An electric locomotive, in a similar situation, is an embodiment of apathy and harmlessness, in its appearance. There is neither throb nor roar, nor steam to scald the wayside passer, nor cindery, sooty smoke to blind the eyes, choke the breath, or stain immaculate linen. In action, however, the electric machine, still comparatively quiet in its movement, often rolls along with a tigerish purr, or a hum as of a vast swarm of angry bees, with now and then a lurid flash,—weird evidence of the mysterious power, invisible as the wind, that lurks in the miles of wire coiled round and round the magnets and armatures of the huge electric motors concealed in the dark interior of the massive frame. Last year, when two of these locomotives were under construction at the works of the General Electric Company in Lynn, there was one day a rare sight. It became necessary to test the comparative power and economy, pound for pound, of an electric and a steam locomotive. The two huge machines—one the bombastic and terrifying consumer of water and coal, the other a silent mass of iron—came gently together on a branch track of the Boston and Maine Railroad leading to the electrical works. Coupled with each other by a strong bar, each monster attempted to drag the other from its position,—the steam sometimes, and then the electric machine, appearing triumphant. This struggle for mastery was watched by many spectators, and with intense interest by those concerned in the manufacture of the two kinds of locomotives.—*George J. Varney in March Lippincott's.*

Art Notes.

Pittsburg Public Art Gallery.—The annual income of \$50,000 which Mr. Andrew Carnegie donated to the Pittsburg Public Art Gallery for the purchase of pictures led to the press of that city calling upon artists, both here and abroad, for suggestions as to how the money could be best invested. The answers are published, together with the portraits and fac-simile autographs of the artists. Naturally the writers are strong in their praises of Pittsburg's future as an art centre. As a consequence the city is looking upon her artistic self with much complaisance. *The Dispatch* remarks, for instance, apropos of a page of these opinions: "Magazines and newspapers everywhere are publishing interesting comments. They all say Pittsburg is destined to be the greatest art centre in the United States; that its new gallery has the opportunity to establish for itself a unique importance among even the older and the most important institutions of the kind in the world."

Boston Museum.—A superb collection of very rare ancient Greek vases, numbering over 50, has just been acquired by the Boston Museum of fine Arts. The vases were obtained through the efforts of a Bostonian, now living in Europe, and it is considered a stroke of exceptional good fortune that it was possible to get them.

The Cleveland Exhibition of pictures, so much talked of because it was the result of an "art pilgrimage," made by about forty Cleveland people to the various large Eastern art centres, has proven a financial success. The receipts amounted to \$12,000, and the expenses will probably be about \$9,000. The difference, if the profit is not knocked out by an accident to some valuable picture on its return journey, will be used by the Cleveland Art Association to purchase some paintings shown at the exhibition. The success of the exhibition has been very gratifying to its projectors, and an attempt is to be made to raise Cleveland to an equal position, as an art city, with Chicago, St. Louis and Pittsburg.

Good taste never permits itself to be ruled by fashion. If your house pleases you, you can afford to laugh at Mrs. Grundy. The very best fashion ever invented is that which intelligence invents to gratify itself.

A Caution to Picture Buyers.—The market is just now full of steel engravings of which the inexperienced buyer will do well to beware. They are presented as proofs, printed on India paper, and often bearing the artist's and engraver's names. The originals are all English, the proofs printed from worn-out plates, and the signatures forged. About the only way to guard against them, if you are not sufficiently expert to judge of their inferior quality for yourself, is never to buy an engraving merely because it is cheap, which recommendation is always put forward for these worthless works.

Etchings.—The rage for etchings has settled down, as might have been foreseen, into a steady and growing demand for the best work only. The day has passed when any scratched plate could be put upon the market and find ready sale merely because it was an etching. The public now want pictures with subjects of interest, executed in the perfection of the art, and the artists and publishers are supplying the want with some of the noblest productions which modern times have given origin to.

Philadelphia Art School.—"There is nothing small about the Philadelphia 'School of Art,'" says the New York *Mail and Express*, "an institution which has grown out of the art display of the Centennial Exhibition in that city. At Harrisburg, the State Capital, the other day, a novel transformation was witnessed in the hall of the House of Representatives, when, on every side, were displayed examples of work from the School of Industrial Art."

Carolus-Duran.—It is reported that the picture dealers in New York, who were to have the profitable pleasure of "managing" the famous portraitist, Carolus-Duran, during his stay in the United States, received a great shock. It came in the form of a cable, announcing that the great Carolus would not visit America this year. The firm already had six positive orders for portraits.

Boston's Appreciation of Art.—M. Puvis de Chavannes will receive \$50,000 for the six mural paintings which he is to execute for the new public library in Boston.

Very few defects remain after a photographer has finished retouching one's picture.

There is no longer a rage for photographs of professionals.

Photographic Hints and Formulæ.

A Glass that Sifts Heat.—The announcement recently made of a German method of producing glass which will transmit light freely, but not heat, has been supplemented by some details as to the manufacture. A plate of this material, $\frac{4}{10}$ of an inch thick, containing 28 per cent. of iron in the form described as ferrous chloride, allowed only 4.06 per cent. of radiant heat to pass through it, while another plate of equal thickness, and containing quite as much iron in the form of ferric chloride, permitted 11.2 per cent. to pass. The chemical distinction is very small, but the effect is said to be marked. A thinner slab of this glass allowed less than one per cent. of the heat of gas flames to pass, although transmitting 12 per cent. of heat from sunlight. Ordinary window glass, on the other hand, lets some 86 per cent. of the heat through.

Photographing Prize Pictures.—Sir Frederic Leighton thinks that the custom of photographing and reproducing the successful pictures at exhibitions is most unfair to the artist. By the time the picture is ready for sale everyone is so accustomed to the hackneyed counterfeit of it that they have no further use for the original. The more popular an artist is the more is this true. He suggests the following remedies for protecting the artists' interests: In the first place to rigorously exclude the fac-simile reproduction of his work from all illustrated catalogues, and return to the pen, pencil or charcoal sketch, so excellent as a mere memorandum of his work, and in itself so absolutely safe. In the next place, to meet with a steady refusal all requests to have his works reproduced by fac simile process in any illustrated periodical or any publication whatever; or if, after due consideration, he finds that he can afford to lend his work for that purpose, at least to prohibit publication till after the close of the exhibitions.

A Transparent Mirror Glass recently introduced in Germany, reflects light on one side, from which it is practically opaque, while from the other side it is transparent. It is proposed to use this type of glass for glazing windows in city residences, for, while it will not cut off light or vision from the interior, it will prevent outsiders from seeing into a room.

The Monitor Studio Register is meeting with great favor of late, as it is a complete set of books in condensed form, and any gallery using this register can exercise the minutest control over their business and see at a glance how many sittings, proofs sent out and returned, pictures ordered, size, style, price, etc., etc. The price is so nominal that every gallery should have one. One great feature in this register is that the index is large and comprehensive, so that no time is lost in looking up names for duplicate orders. For large studios an extra large size is made that will hold about five thousand names. It is the size of a ledger or account book and is handsomely bound in leather ledger binding. Sample sheets and particulars can be had by addressing the Publishers of *THE AMERICAN JOURNAL OF PHOTOGRAPHY*.

Metol.—Information has just been received from the manufacturers of Metol Hauff, Messrs. J. Hauff Chemical Works, Feuerbach, Wuertemberg, Germany, that after exhaustive experiments and large outlays for apparatus they have succeeded in further increasing the purity and strength of Metol-Hauff so that it will be from this time on chemically pure and of greater strength than ever. As the impurities formerly contained in Metol were prone to cause irritation of the skin in persons who are predisposed to eczema or other skin trouble this source of complaint will in future cease. The manufacturers also caution purchasers against using any Metol that does not bear their name, coat of arms and label.

Aphorisms from the Experience of an Old Photographer.
—Better a leak in the roof than in the till. A mean-looking entrance attracts a mean and squalid class of customers. It is not the ordering of stock but the paying for it that puts the dealer to his trumps. He who cannot say "no," and stick to it, ought to start in some other profession. Fine feathers make fine birds, but it doesn't pay to invariably estimate the solvency of a customer by the clothes he wears. The "show-window" is a misnomer in some galleries. It is used for storage purposes for the poorest specimens.

Glass Imitation Mother of Pearl.—Imitation of mother of pearl is now made in Europe from an opalescent glass covered with a light flash of transparent flint glass. In light, wavy pattern, the effect is said to be very fine, especially when a very light color tone is given to the glass.

Society Notes.

The Photographic Society of Japan.—The tempestuous weather of Friday evening, February 15th, greatly thinned the gathering at the Photographic Society's lantern-meeting held in the Masonic Temple. It was matter for regret, for the slides shown were of high merit, worthily sustaining the standard set in previous exhibitions of this kind. First of all was shown a negative taken that day by the incandescent light, an illuminant which Prof. Burton thought not quite so effective for photographic purposes as an electric light, but still of such a character as to produce good results. The selection of slides illustrating Japanese customs, trades, manners, and people, to be sent to the American Lantern Society, were next exhibited, after which Dr. Wood described some slides which had been made from negatives taken in the Hokkaido the previous summer. After an interval, a splendid collection of views on, of and around Fuji were shown, in the course of which Prof. Burton described the ice-caves which he had stumbled across, as it were, in the course of a survey upon the lower slopes of the famous mountain. He propounded the theory that these marvellous caves had been formed through an accumulation of immense snow-drifts which had been overwhelmed by a huge mass of scoriæ during some far-back disturbance of the volcano; and this snow had gradually turned to ice, first by heat and then through compression. The learned Professor arrived at this conclusion upon noticing that the ice of the caves was stratified, a condition not attendant upon glacial formations. A curious thing in connection with these caves is that a low, narrow tunnel, never yet thoroughly traversed, leads from the far end, and through this tunnel rushes a blast of air sufficient to extinguish a torch. Prof. Burton advises a trip from Yokohama to the neighborhood of these caves, claiming that the scenery to be passed through on the way to them is unsurpassed for grandeur and beauty in the whole of Japan.

California Camera Club.—The last outing of the Club, under the present committee, took place on March 24th, to the elegant villa of H. B. Hosmer. It must have been an enjoyable time according to the reports received. One of the features of the day was a "clam bake," which was greatly enjoyed by our Occidental brethren.

Minneapolis Camera Club exhibited on Wednesday evening, March 13th, 1895, at the club rooms, a set of lantern slides from the Photographic Society of Philadelphia.

In the Twilight Hour.

THERE is a time for all things, says Solomon, and there is a time to find fault; it is when you do not feel like it.

A HAPPY life is made up of small pleasures; and most useful lives are made up of small duties and kindnesses faithfully performed.

NOBODY can help noticing the shortcomings of a man who is always behind time.—*Dallas News.*

IF time is precious, no book that will not improve by repeated readings deserves to be read all.—*Thomas Carlyle.*

MOST people would succeed in small things if they were not troubled with great ambitions.—*Longfellow.*

HE is already half false who speculates on truth and does not do it. Truth is given not to be contemplated, but to be done. Life is an action, not a thought; and the penalty paid by him who speculates on truth is that by degrees the very truth he holds becomes to him a falsehood. There is no truthfulness, therefore, except in the witness borne to God by doing his will,—to live the truths we hold, or else they will be no truths at all.—*F. W. Robertson.*

"What use for the rope if it be not flung
Till the swimmer's grasp to the rock has
clung?

What help in a comrade's bugle blast,
When the peril of Alpine heights is past?
What need that the stirring pæan roll,
When the runner is safe beyond the goal?
What worth is eulogy's blandest breath,
When whispered in ears that are hushed
in death?

No, no; if you have but a word of cheer,
Speak it while I am alive to hear."

Mrs. Preston.

LITTLE hills are often enveloped in fog; lofty peaks rise above it.

MOST people would have more leisure if they were not so busy fretting away their time.

MANY a man makes his wife the present of a sealskin cloak, when her heart would be made happier with a kiss

THE world is hard and rude; the world is blind and stupid; the world often fails to know its best friends and its truest benefactors; but there is no crust of stupidity so crass and dense but that through it there will pass the penetrating shafts to light that ray from the face of a man who walks in fellowship with Jesus.—*Maclaren.*

A MAN may be an eternal failure although his footsteps glitter with gold and his words sparkle with knowledge. That man is most successful in the divine kingdom who sets in motion the greatest amount of spiritual power for the glory of God, whatever may be the opinion or reward of fallen mortals.—*John Reid.*

THERE is no true and constant gentleness without humility; while we are so fond of ourselves, we are easily offended with others. Let us be thankful, and let nothing be due to us, and then nothing will disturb us. Let us often think of our own infirmities, and we shall become indulgent toward those of others.—*Fenelon.*

IT has been well said that no man ever sank under the burden of the day. It is when to-morrow's burden is added to the burden of to-day that the weight is more than a man can bear. Never load yourself so, my friends. If you find yourself so loaded, at least remember this: it is your own doing, not God's. He begs you to leave the future to him, and mind the present.—*George Macdonald.*

BARGAIN LIST.—APRIL, 1895.

PORTRAIT CAMERAS.

[For Lenses see Special List.]

- 1—11x14 Portrait Camera, with 8x10 attachment, . . . \$60 00
- 1—8x10 D. S. B. Portrait Camera, 15 00
- 1—8x10 D. S. B. Portrait Camera, with Benster Holder, . . . 25 00
- 1—14x17 D. S. B. Portrait Camera, 40 00
- 1—5x7 Victoria Camera, 4 $\frac{1}{4}$ -lenses, . . . 18 00
- 1—5x7 Victoria Camera, . . . 8 00
- 1—5x7 Victoria Camera, . . . 9 00
- 1—5x8 Stamp Camera . . . 15 00
- 1—5x8 Wet Plate Stereo. Camera, 3 holders, . . . 20 00

VIEW CAMERAS.

- 1—4x5 New Model Improved Camera, . . . \$11 90
- 1—8x10 View Camera and Holder, new, . . . 16 00
- 1—5x8 New Model Camera, . . . 10 00
- 1—8x10 Eastman Reversible Back Camera . . . 25 00
- 1—6 $\frac{1}{2}$ x8 $\frac{1}{2}$ Novelette Camera, new, . . . 20 00
- 1—5x8 Blair Single Swing View Camera . . . 15 00
- 1—6 $\frac{1}{2}$ x 8 $\frac{1}{2}$ American Optical Co.'s View Camera, . . . 20 00
- 1—5x7 Blair Rev. Back Camera, new . . . 25 00
- 1—5x8 Boston Rev. Back Camera, new . . . 25 00
- 1— $\frac{1}{4}$ Eclipse Outfit, . . . 2 00
- 1—5x8 '76 Camera, Holder, Tripod, and Case, . . . 23 00
- 1—5x7 View Camera, . . . 7 00
- 1—5x8 Blair Rev. Back Camera, and 4 holders, . . . 25 00
- 1—6 $\frac{1}{2}$ x8 $\frac{1}{2}$ View Camera, 3 holders, . . . 8 00
- 1—14x17 Ideal Camera, holder, tripod, Orthoscope lens and case, . . . 100 00

HAND CAMERAS.

- 1—No. 1 Kodak, . . . \$10 00
- 1—A Ordinary Kodak, new, . . . 5 00
- 1—5x7 Folding Kodak, new, . . . 55 00
- 1—4x5 Climax Detective, new, . . . 18 00
- 1—4x5 Turnover Detective, new, 15 00
- 1—4x5 Montauk Detective, new, 18 00
- 1—4x5 Hawkeye, Darlot lens, 3 holders, list \$33, . . . 18 00

ACCESSORIES.

- 1—8 ft. Show Case . . . \$12 00
- Large Oak Show Frames, each 5 00
- 1—8x10 Knickerbocker Stand, . . . 5 00
- 1—Corner Chair, Velvet, list \$20, 10 00
- 1—Cooper Enlarging Bromide Lantern, 8 in condenser . . . 40 00
- 1—11-in. Acme Burnisher, . . . 12 00
- 1—14-in. Eureka Burnisher, . . . 18 00
- 1—15-in. Improved Eureka Burnisher . . . 25 00
- 1—15-in. Acme Burnisher, . . . 20 00
- 1—Acme Print Trimmer, new, . . . 10 80
- 1—Baldwin Print Cutter, new, . . . 14 00
- Lot of Picture Mats. Write for particulars.
- 1—14x17 Printing Frame, . . . 1 25
- 1—18x22 Printing Frame, . . . 2 50
- 1—11x14 Printing Frame, . . . 1 00
- 1—8x10 Printing Frame, . . . 40
- 1—10x12 Adaptable Washing Box 3 00
- 1—14x17 Adaptable Washing Box 4 50
- 1—19x24 Deep Agate Tray, new, . . . 5 00
- 2—6x8 Children's Backgrounds, . . . 3 00 and 4 00
- 2—8x10 Bryant Backgrounds, . . . 6 00 and 7 00
- 1—Wall Accessory, . . . 4 00
- 1—Daisy Foreground, . . . 4 00
- 1—Seavey Swiss Cottage . . . 8 00
- 1—Osborne's Rock Accessory, . . . 10 00
- 1—Osborne's Pillar Accessory . . . 15 00
- Lot of second-hand backgrounds, 8x10 and 6x8, \$4.00 to \$6.00; write for particulars.
- Peerless Varnish Pots, each . . . 40
- Full line of Packard Brothers' Grounds *in stock*. Interiors \$5.00; exteriors, \$4.00.
- 3—Junior Ruby Lamps, each, . . . 60
- 1—4 $\frac{1}{4}$ x5 $\frac{1}{2}$ Negative Box . . . 35
- 1—Walmsley Reversible Finder . . . 2 50
- 1—Card-size Burnisher . . . 3 00
- 1—8x10 Porcelain Tray, Shallow, . . . 41
- 1—8x10 Porcelain Tray, Deep, . . . 50
- 1—Dana Chair, new, . . . 6 50
- 1—Divan, Small, new, . . . 3 00
- 1—No. 2755 Rattan Chair, new, . . . 6 50
- 1—Magic Camera Stand, . . . 7 00
- 2—22x28 Moorehouse Display Albums, each . . . 10 80
- 1—Williams Flash Lamp, . . . 75 00
- 2—Air Brushes, complete, good as new, . . . 25 00

Bargains in Lenses.

- 1—3 B Dallmeyer lens for cabinets, . . . \$130 00
- 1— $\frac{1}{2}$ -Size Dallmeyer lens for cabinets, . . . 50 00

1—8x10 Dallmeyer R. R. Lens, list \$74,	45 00	1—5x8 Wide Angle Lens, . . .	5 00
1—5x7 Euryscope Lens, Prosch Shutter,	35 00	2—6½x8½ Wide Angle Lens, ea.	8 00
1—½ Voigtlander Lens,	9 00	1—11x14 Wide Angle Lens, . .	18 00
1—6½x8½ Gundlach Single Lens	3 50	1—Pair Waterbury Stereo Lenses,	4 50
1—5x8 Gundlach Star Lens, . .	12 00	2—R. R. Detective Camera Lens,	3 00
1—8x14 Gundlach Star Lens, . .	10 00	1—Set 1-9 Gem Lenses,	18 00
1—11x14 Darlot R. H. Lens, list \$45,	30 00	1—¼ Gem Lens,	1 50
1—5x8 Darlot R. H. Lens, . . .	15 00	1—4-4 Jamin Globe Lens, . . .	12 00
2—4x5 Darlot R. H. Lens, each	10 00	1—¼ Holmes, Booth & Hayden,	4 00
1—10x12 Blair Orthographic, . .	20 00	1—6½x8½ E. A. Single Lens, .	5 00
		1—6½x8½ Single View Lens, .	3 00
		1—5x8 Single View Lens, . . .	2 50
		1—6½x8½ R. O. Co's. View Lens,	2 00

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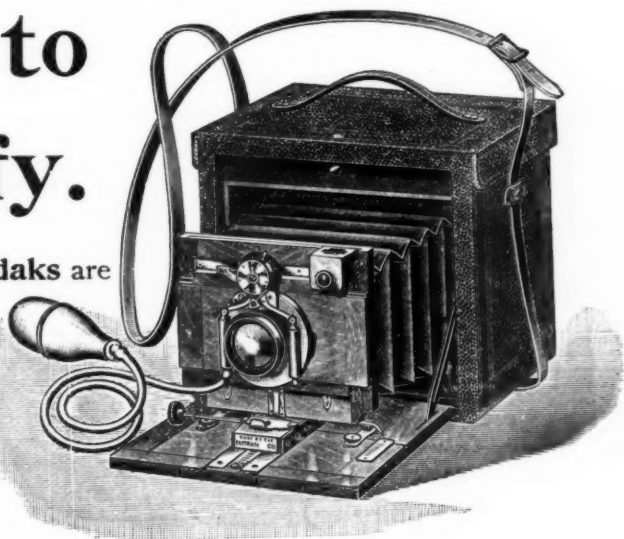
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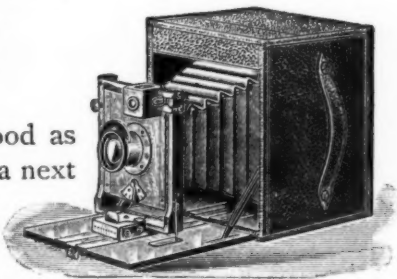


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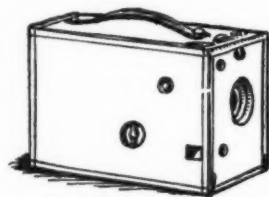
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The idea of being able to invent something strikes most people as being very difficult; this delusion the Company wishes to dispel. It is the simple things and small inventions that make the greatest amount of money, and the complex ones are seldom profitable. Almost everybody, at sometime or another, conceives an idea, which, if patented, would probably be worth to him a fortune. Unfortunately such ideas are usually dismissed without thought. The simple inventions like the car window which could be easily slid up and down without breaking the passenger's back, the sauce pan, the collar button, the nut lock, the bottle stopper, the snow shovel, are things that almost everyone sees some way of improving upon, and it is these kind of inventions that bring the greatest returns to the author.

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THE PRESS CLAIMS COMPANY.

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P. S. The responsibility of this company may be judged from the fact that its stock is held by about seventeen hundred of the leading newspapers of the United States.

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Have a lot of New Specialties to show for 1895. Useful and up-to-date features for use under the skylight.

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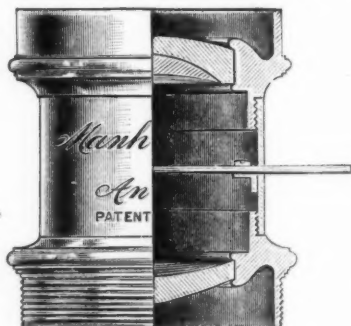
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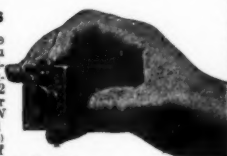
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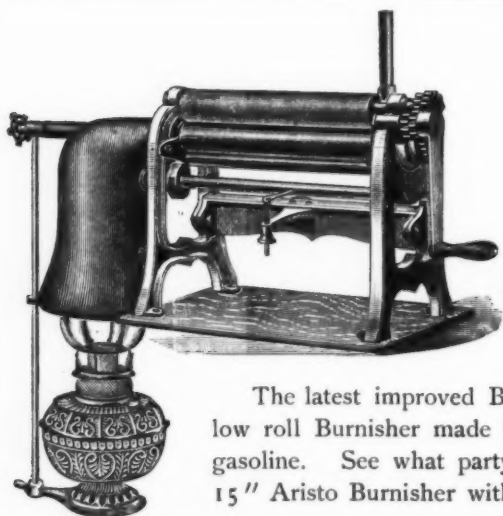
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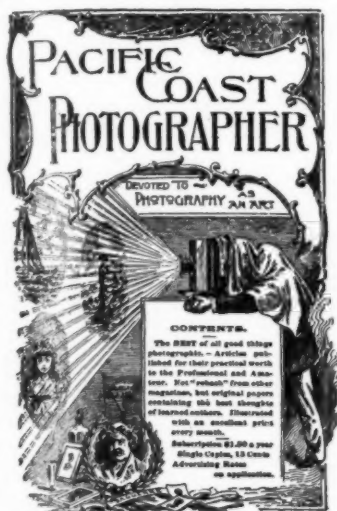
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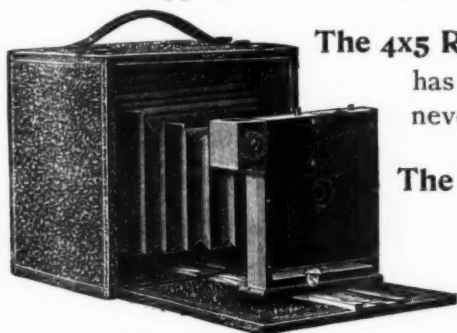
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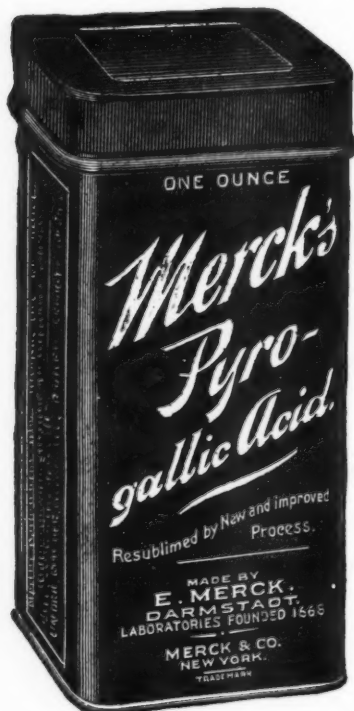
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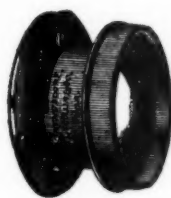
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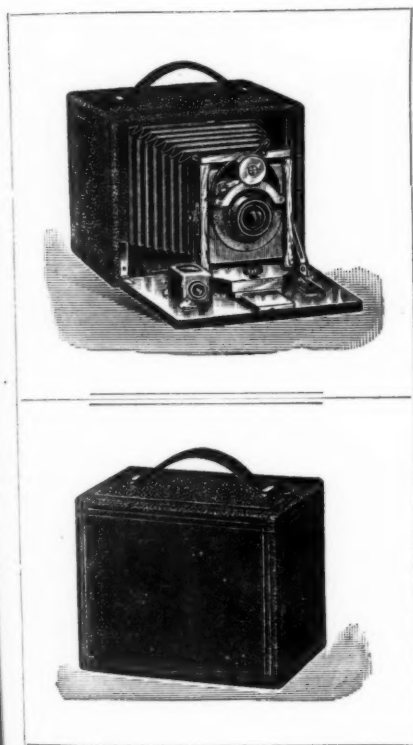
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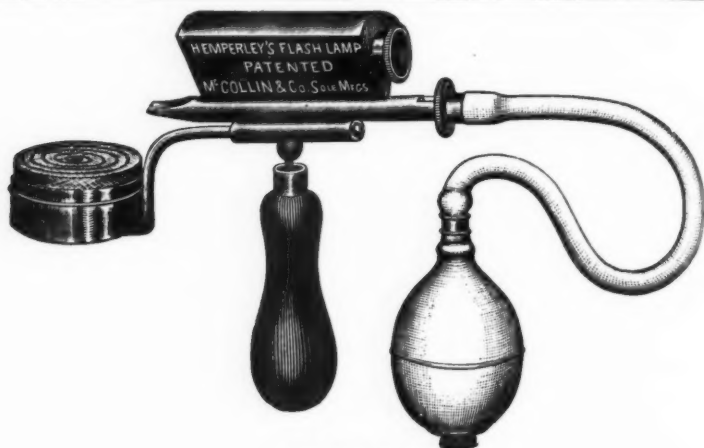
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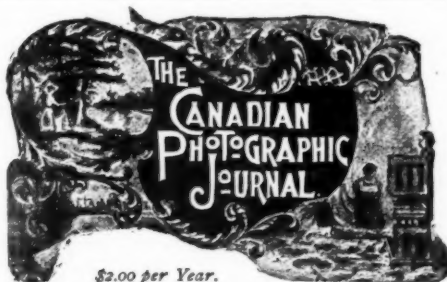
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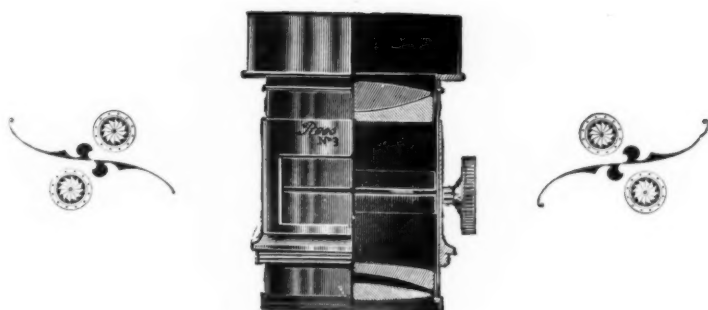
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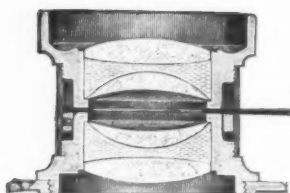
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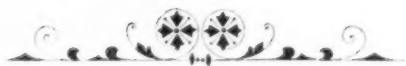
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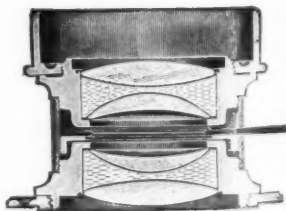
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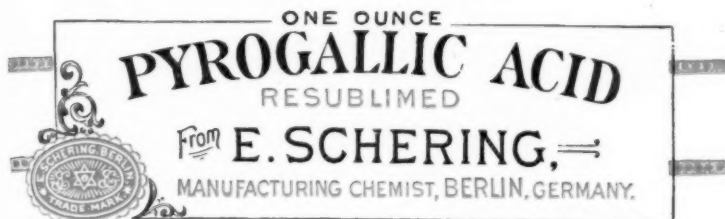


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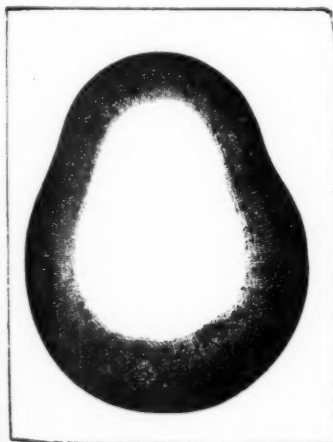
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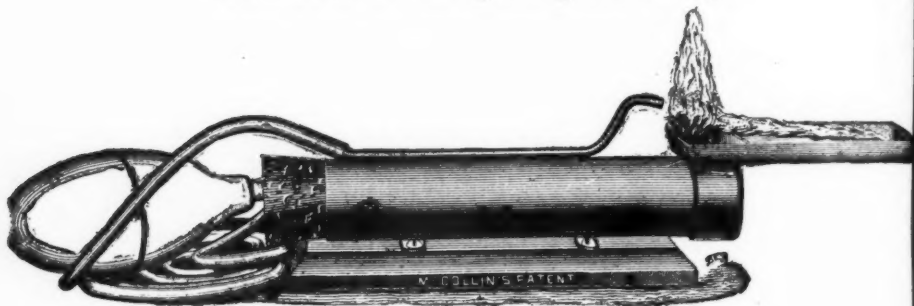
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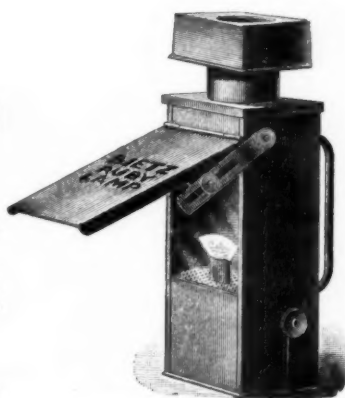
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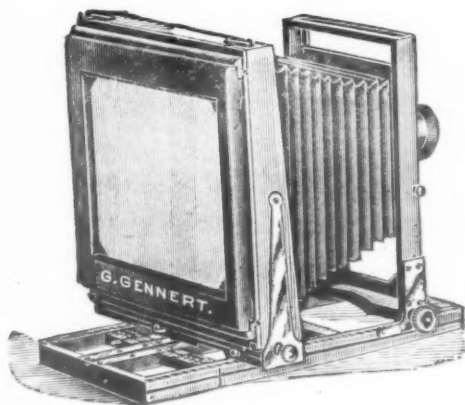
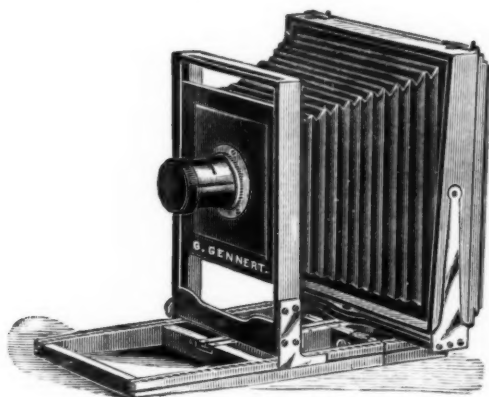
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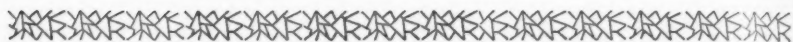
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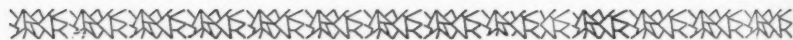
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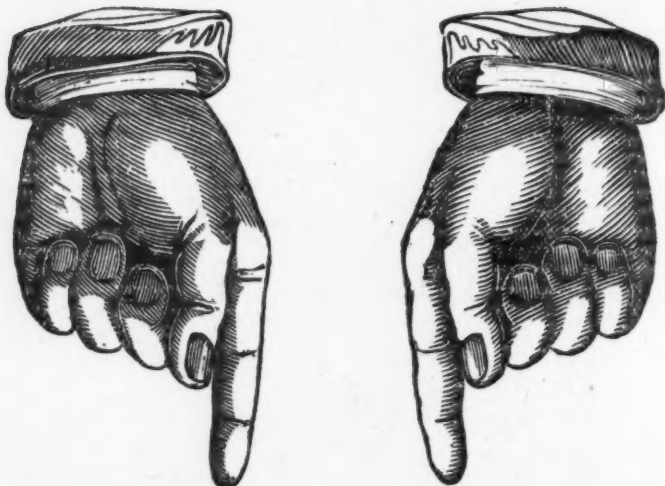
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